# ECONOMIC PERFORMANCE

## An Introduction to ECONOMICS

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# ECONOMIC PERFORMANCE

## An Introduction to Economics

HENRY H. VILLARD
The City College of New York

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## An Introduction to Economics

HOLT, RINEHART AND WINSTON, NEW YORK

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For the mate and the crew

# PREFACE

The average student taking a course in economics at the present time will not retire from work until sometime in the twenty-first century. This volume attempts to provide insight regarding the factors likely to influence the performance of economies over his lifetime. This is, of course, a tall order. Economics texts have generally been content to present the tools of analysis that economists have developed and to discuss matters on which a considerable measure of agreement has been reached. Unfortunately in many cases the standard tools, and the matters on which agreement has been reached, do not convey much insight regarding economic performance. Specifically, the judgment of history may well be that in this century the Great Depression was the outstanding example of economic malperformance and the development of the Soviet Union the outstanding example of superior economic performance (judged, of course, from a point of view which disregards the cost in human suffering that has been involved). But relatively little insight regarding depressions was provided by any of our introductory texts until after the Great Depression had been brought to an end by World War II, and there are still almost none which provide any significant understanding of the rise of the Soviet Union. In our rapidly changing world it seems essential, if we are to discharge our obligations to our students, not to confine ourselves to what we happen to know but rather to try to provide, even if on a preliminary basis, the greatest possible understanding of the factors which are likely to influence the relative performance of economies over as long a period as possible.

Any effort to analyze long-range performance in our present state of knowledge inevitably involves judgment—and the possibility of error. For there is little agreement as to the factors responsible for differences in performance—or even on how economies should perform. But, if economics deals with the satisfaction of material desires, then it would seem appropriate to hold that an economy should provide not merely the largest possible output of the goods and services which satisfy material desires per unit of input at *a point of time,* but also a rapid increase in output per unit of input *over time.* Certainly one of the most pleasing aspects of the American economy is that it has made a manhour of work yield perhaps seven times more goods and services than it did eighty-five years ago. And obviously the rate at which our economy continues to develop will be of primary importance in shaping the sort of world into which our students retire.

As a result, an unusually extensive effort has been made, in Section III, to throw light on the factors which determine differences in rates of economic development. The primary emphasis is on differences among developed free enterprise economies, using Great Britain and the United States as examples. But three chapters are devoted to the Soviet Union, and four to underdeveloped areas. Moreover, even in the discussion—contained in Section II—of the economizing process by which scarce factors are allocated among alternative uses, economic performance continues to be emphasized, as unusual attention is devoted to *how well* our economy economizes in addition to *how* it economizes. It is perhaps understandable that economists should find the latter question more intriguing. For, to take a single example, if one simply *assumes* that market demand is what production should satisfy, the whole messy question of whether the demand of consumers who are frequently ignorant of the alternatives open to them *should* determine production objectives can be swept under the carpet and our tools of analysis come into their own. But, no matter how well informed a student may be on elasticity or even indifference curves, he cannot meet the socialist criticism that planned production is superior to production for profit unless he has considered the extent to which production is misdirected, and factors misallocated, as a result of consumer ignorance. At least in the case of terminal students, who account for the bulk of the enrollment in our introductory courses and for whom this volume is primarily intended, an understanding of the broad rationale—as well as the limitations—of determining production objectives by the exercise of consumer sovereignty appears to me to be of greater importance than an understanding of indifference curves.

In fact, traditional tools of analysis have in general been presented only when they seemed to provide more insight than any alternative way of tackling the subject under consideration. It is a tribute to the usefulness of our kit of tools that this approach causes relatively few basic tools to be omitted; but a great many details and refinements have been dropped in order to focus attention on what appear to be more important matters. The question arises as to the impact of this approach on economics majors. My estimate is that it is likely to increase the number of majors, as in my judgment most students decide to major, not because they are intrigued with marginal revenue and marginal cost, but because they hope for insight on the problems with which this volume is very much concerned. For their benefit some of the tools that have been omitted from the body of the text have been placed in two Appendices, with whose help majors should, I believe, be able to handle work at the level of the typical intermediate course in economic theory.

A considerable amount of descriptive material is presented; but, as with tools of analysis, it is in the main not introduced for its own sake but to cast light on the particular problem under consideration. Hence the volume is neither analytically nor institutionally oriented. In one sense it can be described as problem oriented; but, in place of the usual rather motley collection, the emphasis is on the basic problem of economic performance. This has in turn led to unusual attention to areas where our free enterprise economy appears to be performing badly. Moreover, to provide perspective on the relative importance of different areas, a number of rough estimates of economic waste have been offered. Obviously, as is made quite clear, the margin of error in such estimates is inevitably large; there are those who may well doubt that they belong in an introductory text. But some notion of the relative importance of areas of malperformance seems essential in a text which emphasizes economic performance—even if as a result we are forced to admit how little we know regarding many aspects of the matter!

Section IV is concerned with business fluctuations; perhaps its most unusual aspect is its deemphasis of the formal Keynesian analysis. There is no doubt that the insight provided by Keynes deserves major credit for achieving substantial agreement among economists regarding the measures which should be taken to combat major depressions. But the analysis is not well adapted for dealing with the problems raised by persistent inflation, which appears likely to be a more important problem in the future than severe depression. Hence monetary factors and the quantity equation receive more emphasis than has been usual in recent years. But, in addition, the Keynesian analysis is not of much help in providing an understanding of the factors responsible for current fluctuations—in the sense that (so far as I know) no business analyst uses the Keynesian framework as the basis for predicting year-to-year variations in income and output. As a result, Section IV includes a considerable description of the actual fluctuations that have taken place in the recent past, as well as an effort to locate the "strategic factors" that have been responsible for such fluctuations.

In my judgment a major shortcoming of most introductory courses is that the student fails to see the forest for the trees. Perhaps this is inevitable. But I believe we intensify the difficulty by not providing a broad overall view of the economizing process. It is easy to understand why this is not more often done, as it inevitably involves the danger of undesirable repetition. This risk has been run—and the danger perhaps not wholly avoided—in Section I, which attempts to provide, in six chapters, an overall view of what economizing is all about. For perspective, the final two chapters of the section offer a summary of the role and importance of economic development. Finally, Section V brings together in a single chapter the various estimates of possible improvements in economic performance that have been presented throughout the volume.

Section III utilizes the material, revised and brought up to date, which previously appeared as *Economic Development.*[1] In it I acknowledged my unusually large debt to other economists, so that I shall not repeat my thanks for the generous help that I have received. But I must again mention my increasing indebtedness to the Economics Department of City College, which continues to have my developing ideas inflicted upon them on all possible occasions. So many in the Department have helped in so many ways that it would be quite unfair at this time to single anyone out for special thanks with the exception of Elliot Zupnick, who has worked closely with me for the last year or so, commenting on the entire manuscript, attending to a great many details, and providing substantial drafts of the two Appendices (though the final responsibility for them is, of course, mine).

The contribution of my wife, no economist but a remarkable editor, has steadily increased. In fact, in all fairness I must this time confess that, were it not for her help, this volume would have been infinitely less comprehensible and have appeared far *less* rapidly.

H. H. V.

New York, N. Y.
November, 1961

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[1] *Economic Development* (Holt, Rinehart and Winston, 1959) is a paperbacked volume designed for use primarily in introductory courses utilizing other texts. A revision of *Economic Development* incorporating the material in Section III will continue to be available.

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# Section I | A GENERAL SURVEY

# 1 What an Economy Must Do

## What Is Economics?

This book deals with "economics." What is "economics" about? One famous definition is that "economics is a study of mankind in the ordinary business of life," covering the acquiring and use "of the material requisites of well-being." Another, equally famous, says that economics deals with "those aspects of man's activities that can be subjected to the measuring rod of money." Neither definition is particularly precise. This is as it should be, because the field covered by economics is itself not precise. For the activities devoted to the satisfaction of man's material needs and desires cannot be precisely separated from his other activities.

Does this emphasis on material needs mean that economists feel that such needs alone are important? Definitely not. Activities devoted to satisfying material needs are not necessarily the most numerous or the most important of the things man does. But they do seem important enough to be worth systematic study. Man may not live by bread alone; equally he does not live without bread.

It is true that economists sometimes point out that a desire for material things and a willingness to work hard for them is helpful in making an abundant supply of such things available. Hence those who feel that the world is too materialistic—that people want too many goods and gadgets—sometimes criticize economics as catering to man's baser desires. But the ability of an economy to produce an abundance of goods with a sufficiency of labor equally enables it to produce a sufficiency of goods with a minimum of labor; and nothing in economics as such favors a plethora of goods rather than a plethora of leisure to contemplate the good life.

There may, of course, be a day in which economics ceases to be important. If we wanted no more material things than could be made available by the amount of work that people would undertake for the pure fun of working, then all material things might become as free as air. But, despite the highest standard of living the world has ever known, even in the United States only air is free. And when the magnitude of the things that people would like to have is compared with the amount that we are able to produce, it looks as if scarcity—with which economics deals—will be with us for a long time.

## The Requirements for Production

Why are the things people want scarce? In part it is because, whether they ought to or not, people want a lot of material things. But it is also because we are able to produce only limited amounts of the things people want. Why cannot more be produced? In general, production is made possible by the "factors of production"—natural resources, labor, and capital—and a technology which allows them to be combined so as to result in useful products. Unfortunately the quantity of our productive factors and the quality of our technology is so limited that we cannot produce as many material things as we would like to have. Let us therefore examine each of these limitations in some detail.

*Natural resources* include the free gifts of nature provided without effort on man's part—land, the ores and fuels under the land, waterpower sites, and the like. In one sense nature is niggardly: most of the available resources are in forms that are not immediately useful. True, a few tropical islands have food available for the taking, but they are the rare exception. On the other hand, nature is generous in the sense that available resources are widely scattered over the globe, so that no one area or country has a monopoly. It is, of course, pleasant to find oil in the back yard—so much so that for a while average incomes in Kuwait were higher than those in Great Britain as a result of the oil discovered there. But the importance of resources is generally overestimated, for they are so widely available that their contribution to production, as measured by the share of production they receive, is quite small.

*Labor* is required to turn resources into useful things. The importance of labor tends to be underestimated, for roughly 80 percent of all production is received by labor in payment for its contribution. But, if labor were applied directly to resources, not much would result. It is because tools are available that labor is so productive.

These tools are part of *capital,* which in essence represents resources combined with past labor to produce things which facilitate further production. Note that we are here interested in *real* capital—actual physical facilities—rather than the sums of money which the word "capital" conveys to many people. Specifically, capital includes industrial plant and equipment, our transport system, stocks of goods in the process of being fabricated, and even finished goods waiting to be sold. All of these, in the last analysis, represent a combination of natural resources and labor; even such things as blast furnaces and diesel locomotives represent simply iron ore from the Mesabi Range, rearranged by labor performed in the past. At any point of time capital is not so different from natural resources; it is part of the means of production of any economy. But over periods of time it differs in that it has to be *maintained.* Some tools, for example, wear out in a matter of minutes; other useful things, such as railroad embankments, have a life so long and require so little maintenance that, once built, they become similar to natural resources. But most things useful for production fall in between and have to be renewed every few years.

Last, but by no means least, is *technology.* In the long run, technology may be defined as the way in which labor can be applied to natural resources, which in turn determines the form taken by our capital equipment. In the short run, however, a particular technology is embodied in the available capital of any economy and cannot, therefore, be changed immediately. But we shall see that, even over relatively short periods of time, the importance of changes in technology can be immense.

### Two Economic Problems

The factors of production possessed by any economy are limited in amount: natural resources by the niggardliness of nature, labor because men wish to work only a limited number of hours, and capital if only because it is a combination of natural resources and labor. As a result we have a limited production of the material things people want because we have only a limited supply of the factors which make production possible. It follows that all economies—whatever their character—must solve two basic problems. The first involves "economizing"—*using the limited available quantities of natural resources, labor, and capital so as to satisfy most effectively the material wants of the population in the light of currently available technology.* The second involves "economic development"—*providing for increasing production as time passes, predominantly through improvements in technology.* The first problem, in short, is how to get the most out of what we have; the second is how we can get more in the future.

Note that every individual faces two quite similar problems: how to allocate his present income among all available goods so as to maximize the satisfaction that his income provides, and how to increase his income over time. Clearly, if part of today's income is spent on education or saved, future income is likely to increase; if part is spent on too much alcohol, future income may well decrease. So the two problems are closely related. But they are nonetheless sufficiently distinct to make separate consideration desirable.

## Economizing

How best to use what we have—how best to economize—has received a great deal of attention from economists, so much so that there have been economists who treated economizing as if it were the whole of economics. Perhaps the shortest and most used definition of economizing is "the allocation of the scarce means of production among alternative uses"—the uses including everything, from cabbages to Cadillacs, that we are capable of producing.

Just how the allocation is made and how the economizing problem is solved are discussed in detail in Section II. We shall find that free enterprise, far from providing an "unplanned" or chaotic solution as socialists sometimes charge, probably offers a more rational use of resources than is likely under socialist "planning." But in an extended discussion of economizing such as Section II contains, this overall logic is often lost—just as it is sometimes impossible to see the forest for the trees. To prevent any such loss—even though the procedure clearly involves repetition—the essence of the way in which free enterprise economizes is presented in Chapters 3 through 5 and the overall logic of the process is discussed in Chapter 6.

## Economic Development

How we can get more in the future—the problem of economic development—will receive preliminary attention in Chapters 7 and 8 and detailed consideration in Section III. Note that, although the way in which free enterprise economizes will be discussed mainly in the light of *currently available technology,* much of the discussion of economic development will center on the effectiveness of our devices for *achieving improvements in technology.* In contrast to the discussion of economizing, on which a large measure of agreement has been reached among economists, economic development is a matter that has only quite recently begun to receive systematic consideration and on which relatively little agreement as yet exists. In fact, there may well be economists who doubt that a matter on which there is so little agreement belongs in an introductory text. But, when we consider the overall performance of free enterprise, we shall find that economic development is of immense importance; it is this importance which justifies inclusion of a subject about which economists still have a great deal to learn.

## Specialization and Exchange

When Adam Smith, the founder of modern economics, set out to explain differences in the "wealth of nations"—a project which gave his famous volume its title—he laid great emphasis on specialization and exchange. There is no doubt that his emphasis was justified. The last two centuries have seen a steady shift away from the self-sufficient farm, on which a family produced most of what it consumed, toward increasing specialization. The basic reason for this is simply that labor produces more when it specializes. In fact, Smith himself noted that specialization paid off even when pins were made by hand: he reported that it was worth while to have one man specialize in making the head and another the point of a pin! But the benefits of labor specialization are trivial compared to those which occur when technology is developed which permits capital to be embodied in specialized pinmaking machines. The resulting large-scale production is, however, feasible only if one specialist can exchange his greatly increased output for the greatly increased output of other specialists. Efficient exchange, in turn, requires both an effective transportation system and highly developed marketing arrangements.

In what follows we will take more or less for granted the existence of specialization and exchange. This is not because they are no longer important; actually they are a vital part of any explanation of the differences between "developed" and "underdeveloped" areas. Rather, the point is that they are an accepted part of any "developed" economy—whether it be free enterprise, socialist, or communist. There is, in fact, no alternative to specialization and exchange if the enormous productiveness of modern technology is to be realized. Hence the emphasis Smith placed on specialization and exchange no longer seems necessary.

To this general statement there is one important exception. International specialization and exchange—involving international trade—remain controversial and will receive special consideration in Chapters 22 and 23. But even in this connection the important thing to stress for the United States is that its domestic market—continental in size and with unparalleled transport facilities—today permits greater specialization and exchange than has ever before been possible.

## Fluctuations in Income and Employment

A careful reader may perhaps have wondered, a few pages earlier, how labor could be considered scarce when statistics show that some people are unemployed all the time. How can labor be scarce if all available labor is not used? By "scarce" an economist means "limited in quantity." Thus hotel rooms in a city of any size are never all occupied. But hotel rooms, like labor, are scarce in the sense that there are only a limited number available. Actually some unoccupied hotel rooms are essential if people are to be able to move about freely from place to place. In the same way some people must be temporarily unemployed if we are to be able to shift production from one product to another in response to changing economic conditions. Note that the "cost" of unemployment—in the sense of income forgone—need not necessarily rest upon those who happen to be unemployed; everyone can assume a share of the burden through social insurance.

This sort of unemployment, which results from people changing jobs in response to changing economic conditions, occurs when there are as many jobs looking for people as there are people looking for jobs. Unfortunately it is not the only cause of unemployment. At the bottom of the Great Depression in 1933 perhaps a quarter of the entire labor force was out of work; even in more normal times our economy is subject to periodic fluctuations in income and employment. The factors responsible for such fluctuations are of sufficient importance to deserve separate and extended consideration in Section IV. There is no doubt that the massive unemployment of the Great Depression represented a major and serious criticism of the performance of free enterprise. Unless the waste involved can be held to reasonable levels in the future, the case for free enterprise is seriously weakened.

## A Digression on Definitions

Definitions are a dull business, but they have contributed immensely to understanding. It is, for example, quite possible to develop a first-class debate on whether "water" does or does not conduct electricity. For the truth of the statement depends on whether "water" means $H_2O$ or $H_2O$ plus the other oddments that come from the average tap. It will for this reason be necessary for us, from time to time, to be fairly precise in regard to the meaning of the terms we use. For definitions can be avoided only if we are after an argument rather than understanding. In fact, if an argument is wanted, then nothing should ever be defined: the debate as to whether water does or does not conduct electricity will be interminable so long as no one agrees as to what is meant by "water."

One term we have not yet defined is "free enterprise." It refers to a system in which the means of production are privately owned, in contrast to communism, where the means of production are publicly owned. Between the two extremes a vast range of combinations is possible, including the many versions of socialism. Note that we have not used "capitalism" to describe our system. For our economy is no longer unique in using large quantities of capital in the process of production. In fact, in this sense of the term it is correct to say that the Soviet Union is doing its best to become "capitalistic"! Nor does it seem appropriate to describe our economy by the term "laissez faire"—at least in the original sense of a system under which businessmen are "let alone to do" as they wish. For today businessmen—and the rest of us, for that matter—are increasingly restrained in what we can do by the expanding role of government. Thus "free enterprise" seems the best term by which to describe our type of economic system.

## The Role of Value Judgments in Economics

A scientist, *as scientist,* has nothing to say in regard to what is, or is not, desirable. In other words, he can tell a person that a poison will kill him but cannot say whether that person should or should not take the poison. If "economist" is used in a parallel sense, it follows that an economist, *as economist,* can say nothing in regard to economic policy. Does this mean that economic policy can be considered only by those who are not economists—and therefore know little or nothing of the subject with which they are dealing? Not quite. For "economist" is often used in a second sense of a person familiar with the subject matter of economics whether or not he is acting strictly as a scientist. In this second sense an economist may concern himself with economic policy; in fact, in my judgment he has an obligation to do so, as economic policy is altogether too serious a matter to be left to amateurs!

If the two meanings of "economist" could be kept distinct, few difficulties would arise. But many economists, who rather suspect that physical scientists look down on them in the same way that they themselves look down on sociologists, are reluctant to consider economic policy for fear that the inevitable controversies regarding policy will diminish their prestige as scientists. They feel, therefore, that economics should confine itself to presenting results which have been empirically verified or conclusions which follow without exception from precisely stated assumptions—in other words, that economics should be "positive" rather than "normative."

Obviously no economist—unless he wishes to be excommunicated by his colleagues—wants to do anything to reduce the prestige of his profession. Moreover, on matters of policy the value judgment of the least attentive student in the last row is as "authoritative" as that of the teacher—a most disquieting situation for a teacher accustomed to having his word accepted as gospel. Hence the temptation to eliminate controversial material is strong. The difficulty with trying to be purely "scientific," however, is that, if followed logically, it severely limits the help that economics can give regarding the actual decisions every economy has to make. In fact, nothing could even be said about the overall desirability of free enterprise, which obviously involves a value judgment!

Actually, many texts which profess a "scientific" approach do consider policy matters. In fact, what frequently happens is that, in attempting to appear "scientific," value judgments are concealed rather than avoided. But no particular purpose appears to be served by making the reader ferret out the author's value judgments. In any event this is an activity that will require little time in this volume. At the risk of repetition an effort has been made throughout to indicate wherever judgments appear to be involved—especially where my judgment appears to differ from the consensus of economists. All that "scientific" method requires, as I see it, is a careful distinction between objective knowledge and value judgments. Whether the two have been kept sufficiently separate, and the value judgments labeled sufficiently carefully, to qualify this book as "scientific" is up to the reader to decide.

# 2 Measuring Production and Income

## Measurement and Living Levels

Before turning to the preview of economizing that is presented in Chapters 3 through 6, it will be worth our while to consider how best we can measure the goods and services that an economy produces. There are many reasons for wanting to measure the quantity of goods and services produced by an economy, but perhaps the most basic is that the output of goods and services measures the ability of an economy to satisfy material wants—in other words, the "level of living" it provides. Note that we are interested in measuring how a person actually lives, not how he might like to live. ("Standard of living" was once used by economists in this connection, but "standard" suggests what a person should have, or might want, rather than what he actually has. For this reason economists have come to substitute the neutral word "level" for "standard" when the reference is to actual living conditions, and we will conform to this usage.)

To measure living levels what we most want to know is the quantity of goods and services that become available during a period of time such as a year, rather than the quantity available at a point of time. Quantity at a point of time represents all production surviving from the past and is therefore a measure of the *stock of wealth*. While knowledge of the wealth is important for certain purposes, it is, in general, less useful than estimates of the *flow* of production during a period of time. This flow of production is equal to the *income* of any period and determines what can be continuously utilized from period to period without depleting the stock of goods inherited from the past. There is by no means complete agreement as to how the flow of production may best be measured, but by far the most widely used estimates in the United States at the present time are those published by the Department of Commerce. Let us therefore first see how the estimates of that department are constructed, and then consider some of the implications of the method that have troubled other estimators.

### Gross National Product

We may start with the fact that in any period—conventionally a year—vast quantities of goods and services are produced. But many of them are used up during the period in creating other goods and services. If wheat is milled into flour and the flour made into bread, we obviously do not want to total the value of the wheat, the flour, and the bread. To do so would involve double counting and overstate the production achieved. There are two conceptual ways in which such duplication may be eliminated. We may include in the total only the *value of output at the point of final purchase*—as when bread is sold to the housewife—and in this way eliminate intermediate production. Or we may measure the *value added at each stage of production.* For, in the example of bread, the sum of the original value of the wheat (all of which is added by the farmer) and the value added by the miller to the wheat, by the baker to the flour, by the distributor to the bread as it comes from the bakery, and by the retailer to the bread bought at wholesale will be equal to the value of the bread sold to the housewife.[1] When double counting is eliminated by one or the other of these techniques, we obtain the *gross national product,* which is nothing more than the *total production of all goods and services adjusted to eliminate duplication.* This is the broadest available measure of production; it is widely used, usually being referred to as the GNP.

### Net National Product and National Income

In any period the capital equipment of a country deteriorates. Mostly this is the result of the actual use of such equipment to make the production of the period possible. But equipment also deteriorates even when it is standing idle or, as a result of the availability of new and improved technology, becomes less valuable even though unchanged physically. If businessmen are to maintain their capital intact—so that they have as much capital at the end of the period as they had at the start—they must systematically set aside *depreciation allowances* equal to the decline in value of their capital occurring in each period. Actually the allowances used by the Department of Commerce are mainly those which the Treasury permits corporations to charge off before becoming liable for corporate income tax. One difficulty to which this procedure gives rise is that the allowances permitted by the Treasury are based on the *original cost* of the equipment and are therefore inadequate when prices are rising. More generally, such allowances are inevitably subject to a considerable margin of error, as they attempt to estimate the economic rather than the physical life of the capital equipment involved. In any event, however calculated, depreciation allowances, together with certain other minor deductions, are collectively called "capital consumption allowances" and have to be deducted from gross national product to determine the quantity of goods and services that are available as a result of the production of any year without reducing the stock of capital in existence at the start of the period; this is called the "net national product."

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[1] To make the two approaches completely identical it is necessary that increases or decreases in inventories of unfinished goods be treated similarly. This can be done, for example, by treating inventories as a special point of final purchase or a special stage at which value is added. Here a detailed discussion of the handling of inventories does not appear warranted.

One further deduction is necessary. In Department of Commerce usage, the contribution of government to production in any period is taken as equal to government purchases of goods and services (including the services of those employed by government), which we may for short call "the cost of government." But part of the cost of government is met by taxes levied on the businesses of the country, which are paid by the businesses themselves rather than by their owners. These taxes, which are called "indirect business taxes," must be deducted from the net national product if we are to get the income received by the factors of production. The result is called the "national income," which is also equal to the value of the goods and services received by the factors of production (including in such goods and services that part of the cost of government which is paid for by taxes levied on the factors of production rather than on business).

## Estimates for 1960

Thus in 1960 gross national product, or the total value of all the goods and services produced by the American economy with duplication eliminated, was $504 billions. Of this, business as a whole set aside $43 billions in capital consumption allowances to offset the depreciation of its capital equipment, so that *net national product,* or the production available without depleting capital, amounted to $461 billions. Of this $44 billions was contributed by business, in the form of *indirect busi-*

*ness taxes* and related items, toward meeting the cost of government, so that the *national income*, or the amount accruing to the general public, was $417 billions. Of this total, in turn, $329 billions was spent on personal consumption, $32 billions was saved and invested (gross investment less capital consumption allowances), and the remaining $56 billions went to pay for that part of the cost of government which was not covered by indirect business taxes, as Table 2-1 makes clear.

TABLE 2-1

National Income and Product in 1960

(In billions of dollars)

| | | | |
|---|---|---|---|
| Gross National Product | 504.4 | Gross National Product | 504.4 |
| Capital consumption allowances | 43.1 | Personal consumption expenditures | 328.9 |
| Net National Product | 461.4 | Gross investment | 75.4 |
| Indirect business taxes | 45.6 | Government purchase of goods and services | 100.1 |
| Minor items | −1.3 | | |
| National Income | 417.1 | | |
| Compensation of employees | 293.7 | | |
| Rental income of persons | 11.7 | | |
| Net interest | 18.4 | | |
| Proprietors' income | 48.2 | | |
| Corporate profits | 45.1 | | |

SOURCE: *Survey of Current Business.* Components do not always add to totals because of rounding errors.

Why are three concepts necessary? Because they represent different aspects of the quantity of goods and services being produced. In wartime, for example, it may be possible to postpone the replacement of capital; in that case it is the gross national product we will want to consider, as it indicates the goods and services that are available in the short run and, therefore, the amount that can be diverted to the immediate war effort. But for the long run, when we want to know how much will be permanently available after the depreciation of the capital stock has been provided for, it is the net national product which provides the answer, and also gives the value of output at actual *market prices* (which include the indirect taxes that business pays). Finally, if we want to know how much is actually paid out or credited to the factors of production (land, labor, and capital), then it is the national income which we will want to use. Note that the national income gives the value of output in terms of *factor costs*—in other words, in terms of the cost (including profits) of the factors whose services are embodied in the output in question.

Any number of detailed breakdowns of these basic concepts are possible, some of which are presented in Table 2-1. National income, for example, can be divided into compensation of employees, corporate profits, proprietors' income, net interest, and rental income of persons. Again, gross national product may be broken down into personal consumption expenditures, gross investment, and government purchases of goods and services. Just what is included in each case should be determined before a category is used, for the descriptive titles are often misleading.

### The Equality of Income and the Value of Production

A characteristic of this system of accounts is that the value of the goods and services produced in any period is equal to the incomes earned in their production. This follows from the way the terms are defined—in other words, is true by definition rather than requiring proof. For cost payments by business are income to those receiving them. This is obvious in the case of wages, interest, or the rent of land—payments to the factors of production. But other business costs, such as payments for raw materials, ultimately resolve themselves into such factor payments plus profits. When we consolidate all cost payments for the economy as a whole, therefore, we have all income payments except profits. It follows that when we add profits to other income payments to get total income, we have something which must be equal to the value of production; for profits are defined as the difference between the value of the goods and services produced and their cost of production. One way of understanding what is at issue is to realize that if costs turn out to be larger than the value which business receives for production, profits will be negative. This is exactly what happens at the bottom of a severe depression; at such times business as a whole suffers losses (negative profits) because more is paid out as costs than is received from the sale of the goods and services. In short, profits—positive or negative as the case may be—when added to costs give the value of production; but equally, when added to all income payments except profits, which are the same thing as costs, they give total income. Hence total income is inevitably equal to the value of all goods and services produced.

### Some Conceptual Difficulties

If what has just been presented appears straightforward—if not simple—it is because many problems have been concealed. Take, for example, an expansion of government activity. Some activities—roads, parks, presumably education—are of direct benefit to consumers. But what of an expansion of military expenditure? If, for example, such expenditure rose from 10 to 20 percent of income—leaving 80 percent rather than 90 percent for consumption—would "production" be unchanged? As calculated by the Department of Commerce it would be; for the department measures the contribution of government to "production" by the cost of government without regard to the services which government renders. In essence the problem is whether military expenditure should be treated as if it were of direct benefit to the consumer—in which case production would obviously be unchanged—or as merely facilitating the production of things useful to the consumer. In the latter case, production would decline, just as it would if depletion of resources required a doubling of the effort needed to grow wheat without any increase in the bread which was available.

There is no "right" solution to a problem of this sort—any more than gross national product is a "righter" measure of the goods and services produced than net national product. The choice depends on the purpose to which the estimate is to be put. If we are concerned with changes in the productivity of the economy, the Department of Commerce approach is likely to be most useful; but if we are concerned with the current flow of goods and services to consumers, an alternative would be preferable. In short, when using any estimate it is essential to bear in mind the way in which the particular series is constructed. Thus if since 1940, Swedish income, measured by the Department of Commerce approach, had increased as fast as income in the United States, it would justify the conclusion that the performances of the two economies had been similar in regard to production but it would not mean that goods available to consumers had increased by similar amounts.

### The Impact of Industrialization on the Estimates

The sort of problem raised by the proper treatment of government is, unfortunately, not unique. In a small town a man may walk to work; in a large city he may commute from a considerable distance. If he moves from town to city, the service of transporting him to work each day will be considered an addition to production. If his wife takes a job and hires a previously unemployed maid to take care of the house, production will increase by the value of both his wife's work and that of the maid. The industrialization and specialization that have been going on in the United States for more than a century mean that we increasingly buy things which were previously made at home. And there has been a steady increase in the percentage of the population in the labor force. Both of these involve increases in reported income and production which undoubtedly overstate the benefits that have resulted, because the production which formerly took place in the home was not counted. Alternatively the recent "do-it-yourself" movement works in the opposite direction.

Frequently the theoretically desirable procedure cannot be followed because information is lacking. It is, for example, obvious that the government owns much useful capital such as our network of roads, but government capital is not credited by the Department of Commerce with making any contribution to current production. The reason is that the contribution of private capital can be measured by the interest and profits which the owners of such capital receive. But this cannot be done in the case of the government because there is no necessary correspondence between the size of the government debt and the quantity of government capital. Government debt may arise from wars or deficits on current account without an increase in capital, and capital may be financed on a pay-as-you-go basis without an increase in debt. As a result, interest on government debt is not included in the national income, as it is obviously not a payment for current services. But, as no alternative measure is available, the contribution of government capital to current production is simply omitted from the national income.

### Personal and Disposable Income

All the estimates presented thus far represent various ways of measuring the value of the current output of goods and services or the income derived from the production of such goods and services (which, as we have just seen, are always the same). Certain other measures are of interest even though they do not measure any aspect of production. *Personal income* is perhaps most important, as it measures the actual amount of money people receive in any year. *Disposable income,* on the other hand, gives the actual amount of money people have left after paying personal taxes, which they can then either save or consume. The relationship between national income and personal and disposable income is summarized in Table 2-2. Note that the two sets of items are interrelated. To obtain the net amounts transferred to individuals by government and business, the social security contributions of individuals are first deducted (as they are a part of wages and salaries *not* currently paid out to recipients) and then total transfer payments are added back. The essence of a transfer payment is that it is made for reasons other than in return for current productive services. At present, old-age pensions are most important, but veterans' benefits, payments to the unemployed, and a wide variety of other social security and direct relief payments are involved. Second, to determine the portion of corporate profits actually received by corporate owners, all corporate profits are first deducted; the dividends paid by corporations are then added

TABLE 2-2

Personal and Disposable Income in 1960

(In billions of dollars)

| | | |
|---|---|---|
| National Income | | 417.1 |
| *Less:* | Social security contributions | 20.7 |
| | Corporate profits | 45.1 |
| *Plus:* | Government transfer payments | 27.3 |
| | Business transfer payments | 1.8 |
| | Dividends | 14.1 |
| | Interest on government debt | 7.8 |
| *Equals:* | Personal income | 402.2 |
| *Less:* | Personal taxes | 50.4 |
| *Equals:* | Disposable income | 351.8 |

SOURCE: *Survey of Current Business.* Components do not always add to totals because of rounding errors.

back. Finally, the interest paid on the government debt, which (as was just explained) is not included in the national income, is added. The result is *personal income,* from which *disposable income* can be derived by deducting personal taxes. Personal income is a concept that we shall make much use of when we come to discuss the way in which income is actually distributed.

### Current versus Real Income

In the various measures of income we have discussed, the goods and services produced have been valued in *current prices*—those prevailing in the year in question. Thus, when output and prices are rising, the increase in income is the product of the larger quantity of goods multiplied by the higher prevailing prices. For many purposes it is useful to have, from year to year, a measure of the quantity of goods and services produced *apart from changes in prices,* which is called *real income* to distinguish it from *current or money income* based on current prices. Real income is computed by valuing the goods and services of a number of years in the prices which prevailed in a particular year called the *base year.*[2] Because an unchanging set of prices is used, the influence of price changes is eliminated. National income for selected years in both current and real terms is presented in Table 2-3. The influence of changes in prices can be clearly seen by comparing the first and second columns of the table. For example, the value of the goods and services produced in 1929, valued in the prices that prevailed in

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[2] Some of the problems that arise in choosing the base year are discussed further in Chapter 27.

### TABLE 2-3

### Real and Money Income in Selected Years

| Year | Money Income (Billions of current dollars) | Real Income (Billions of 1960 dollars) | All Prices (1960 = 100) | Consumer Prices (1960 = 100) |
|---|---|---|---|---|
| 1929 | 87.8 | 175.2 | 50.1 | 57.9 |
| 1933 | 40.2 | 104.1 | 38.6 | 43.7 |
| 1939 | 72.8 | 173.3 | 42.0 | 47.0 |
| 1946 | 180.9 | 277.5 | 65.2 | 65.9 |
| 1950 | 241.9 | 309.3 | 78.2 | 81.3 |
| 1955 | 330.2 | 373.5 | 88.4 | 90.5 |
| 1960 | 417.1 | 417.1 | 100.0 | 100.0 |

SOURCE: *Survey of Current Business* and Bureau of Labor Statistics.

that year, was $88 billion; valued in terms of the prices prevailing in 1960, it was almost twice as much.

The third column presents the behavior of the average of *all prices* used to derive real income, which is the broadest measure of prices that we have; the final column presents the behavior of *consumer prices*. In each case what is presented is a "price index," which shows what average prices were in particular years relative to what they were in 1960—in other words, which takes 1960 as the base year.

### Usefulness of the System of Income Accounts

Do the various problems that have been discussed and the various qualifications that have been made mean that these estimates of income and output are of little value? Far from it. The estimates have added greatly to our understanding of the production of our economy and the way in which it is distributed. But they are *estimates* based on a series of decisions which must ultimately be made with reference to the purpose for which the statistics are to be used. In the short run, so long as the estimates are consistently made, most of the problems we have been discussing are not very important, though the impact of war is an obvious exception. But the complications which we have considered should leave the student aware that comparisons between countries—especially if the estimates have been made by different estimators—and comparisons over long periods may involve major errors as a result of purely technical considerations. Hence all comparisons need to be made with full recognition of the difficulties and uncertainties involved.

# 3 Economizing under Free Enterprise

## Consumer Sovereignty

Let us start our examination of economizing under free enterprise by considering how income recipients determine what is to be produced by the way in which they spend their income. This is called "consumer sovereignty" because most income is spent on "consumption"—goods and services which satisfy consumer wants directly. In 1960, 65 percent of the GNP was spent on consumption, 20 percent on government purchases of goods and services, and 15 percent on investment goods. But because investment goods were in part paid for with depreciation allowances and government purchases of goods and services in part by indirect business taxes, over 78 percent of the national income was spent on consumption, 14 percent on government purchases, and 8 percent on investment.

It follows that the decision in recent years regarding a significant amount of net production has been made by government purchases of goods and services. Moreover, the rules and regulations of the government also set the framework within which the consumer is allowed to spend his income. And business itself, with the help of modern advertising, tries hard to influence the way in which the consumer spends. As a result, the consumer is no longer an absolute sovereign—if he ever was one. Let us examine in turn each of these limitations on his sovereignty. On the other hand, we shall postpone until Section II, largely because of the complexities that are involved, any further consideration of saving, investment, and capital formation.

### The Role of Government

Governments purchase goods and services in order to undertake two sorts of activities: first, certain "basic" services, such as a system of law and order, police protection, and defense against foreign aggression; and, second, all other government services, which can be called "additional" services. Although it may not be completely true, since private police and armies are conceivable, the basic functions, for practical purposes in the modern world, can only be performed by government; in any event, there is likely to be general agreement, even among extreme advocates of laissez faire, that they should be performed by government. Because of the importance of defense, even today most government activity falls in this category.

On the other hand, it is perfectly possible, for example, to have all education provided by private schools operating in response to consumer spending. Instead, in most developed countries the government purchases the goods and services necessary to make education generally available, paying for the purchases with taxes levied in large part on consumers. Why does the government interfere in this way with consumer spending? In a democracy consumers collectively do not differ greatly from the voters who collectively determine government policy. But there is no reason to believe that consumers in the market place will necessarily reach the same decision as do voters at the polls. Although there are other reasons, perhaps the most important reason why the government provides education is that voters feel that consumers, if let alone, *will not spend the socially desirable amount on education.* In the same way there are those who want us to "force" ourselves to spend more for protection against old age, unemployment, or ill-health than we are likely to spend "voluntarily" as consumers.

The extent to which we as voters should "force" ourselves to provide by government action services which we would not "voluntarily" purchase as consumers is one of the most hotly debated topics in economics. It is a matter which we shall want to consider in some detail in connection with the proper role of government, but here we need only note that, rightly or wrongly, the decision in most developed economies is for the government to provide many additional and debatable services in addition to those basic services which are generally agreed to be a government responsibility.

In addition to purchasing goods and services, governments today restrict and restrain many kinds of consumer spending. Merely having the money is not sufficient to purchase—legally, at least—marijuana cigarettes, or to keep a pig sty in the middle of a residential district, or to build a house in such a way that it is likely to burn up or fall down. Again much excise taxation (but by no means all) is designed to restrict consumer choice: because perhaps half is taken by taxes, $5 spent on whiskey, for example, allows a consumer to obtain the services of far fewer factors of production than $5 spent on milk. Moreover, in addition to education, which the government usually provides free, the government often sells at less than cost services it wishes to encourage—such as postal delivery of newspapers. In short, consumer sovereignty, even over the range left after taxes have been paid (and saving provided), operates *within a framework established by the government and periodically altered as a result of changes in social policy.* Clearly the consumer is today no more than a limited sovereign.

### Consumer Sovereignty and Advertising

Is his sovereignty further limited by the existence of modern advertising? Advertising—on which we spend rather more than 3 percent of the national income or roughly half what is spent on all forms of education—does, for all its excesses, manage to convey a considerable amount of information. To the extent that it provides the consumer with information he would not otherwise have had, advertising clearly enlarges the sovereignty of the consumer by increasing his range of choice. There is no doubt that the information provided by advertising meets an essential need; advertising is, in fact, expanding in the Soviet Union as the variety of goods available to consumers increases.

On the other hand, from the social point of view advertising involves a certain amount of waste. Much of the impact of one company's advertising is likely to be neutralized by the advertising of its competitors, so that the spending involved provides no social benefit. Again, advertising sometimes causes people to buy worthless, or practically worthless, products—and sometimes even definitely harmful products. Finally, there is no doubt that modern advertising does to some extent interfere with consumer sovereignty. But the estimates presented in Chapter 4 suggest that the wastes involved in advertising are, on an overall basis, quite small. Moreover, Section II, which considers the matter in some detail, reaches the conclusion that, from the point of view of the economy as a whole, the limitations on consumer sovereignty that result from advertising are also relatively minor. In short, it appears that the impact of advertising is typically exaggerated—perhaps because those in advertising are adept at convincing their sponsors of the importance of what they are doing!

### Consumer Sovereignty and Consumer Ignorance

Consumer sovereignty, in summary, is limited by the goods and services which the government purchases, by the rules and regulations which the government lays down, and, to a minor extent, by modern advertising. But, despite these limitations, the way in which consumers spend their income even today establishes the vast majority of our production objectives. Why should consumers decide what is to be produced? The classic answer to this question is another question: Who knows better than consumers what consumers want? When one thinks of the variety of things that we are capable of producing and the variety of things that give consumers pleasure—from stamp collecting to climbing mountains or sailing small boats in the dead of winter—it seems clear that the only way of meeting any important part of the desires of consumers is to let them decide what should be produced.

But do consumers really know what they want? It can, of course, be argued that, so long as a consumer parts with his money voluntarily, he *must* want whatever he bought. But it seems more than a little doubtful whether the man who purchased a tapeworm egg as a reducing remedy would have bought it if he had known what he was buying! In other words, consumer sovereignty makes sense only so long as the consumer knows what he is doing. Obviously tapeworm eggs are not the major problem; there is today quite general agreement that we should prohibit clearly harmful products—if only because dead consumers have difficulty learning from experience. On the other hand, we are not interested in "reforming" the consumer. The world would certainly be a different place if consumers generally preferred Beethoven to jazz and functional transportation to cars laden with chrome-plated trim; but economics is not concerned with changing basic tastes. What it must be concerned with, in my judgment, is the extent to which, with basic tastes unchanged, consumers would choose more effectively if more resources were devoted to informing them regarding what is, or can easily be, known about products they buy. Thus far economics has devoted relatively little attention to the impact of consumer ignorance on economic performance. But equally, in the complex world of modern technology, there are likely to be few, if any, economists who argue that "ignorance is bliss" or "what the consumer doesn't know won't hurt him"! This is a matter to which we shall want to return.

## Production and the Entrepreneur

After consumers establish production objectives by the way in which they spend their income, someone has to *undertake* to combine the available factors of production so as to produce the goods and services consumers want. In economics he is called an "entrepreneur," the French word for "undertaker" (which had a prior meaning in English). The entrepreneur—thus far referred to here as a "businessman"—has no high social purpose in mind; he is simply interested in getting, from the smallest possible quantity of the factors he can hire, the largest possible quantity of a product that he can sell at the highest possible price—thereby making the largest possible profit. But the effort to maximize his profit may have socially desirable results. For, in seeking to minimize the factors he hires, an entrepreneur conserves the economy's supply of scarce factors of production; in seeking to obtain the largest possible quantity of a product, he gets as much as he possibly can from the factors he does hire; and in seeking to produce the product that he can sell at the highest possible price, he produces what consumers are most willing to pay for—and, therefore, presumably want most urgently.

## Competition and Free Enterprise

But what prevents an entrepreneur from underpaying the factors he hires and overcharging the public to whom he sells? Despite his advocacy of free enterprise, this is exactly what Adam Smith assumed businessmen would do when, in 1776, he wrote in *The Wealth of Nations:*

> People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices [Book I, Chapter 10, Part II].

Why, then, was he prepared to advocate "laissez faire"—that businessmen be let alone to do their worst? He believed that competition could be counted on to restrain the natural tendency of businessmen to exploit both the public to whom they sell and the factors they hire. But Smith was writing at a time when the modern corporation was in its infancy and producers were typically small scale and numerous. What reliance can be placed on competition in a world in which giant corporations are responsible for most production? Are they not certain to "exploit" both the public and the factors they hire? Communists certainly do everything they can to spread the notion that ours is a system of "monopoly capitalism." How much truth is there in such a charge?

### Natural Monopolies

First, in certain areas of the economy competition is impossible because one firm can produce more cheaply than a dozen. A single telephone company, for example, can offer service at a lower overall cost than a consumer would pay if he were required to have a dozen different telephones of competing telephone companies. Such cases involve what are called "natural monopolies" by economists and "public utilities" by lawyers. In addition to telephones, most transport companies (including rail, air, bus, and pipelines) and most local utilities (supplying gas, electricity, and water) fall into this category. In many cases, of course, such companies face considerable competition—but not enough for us to rely on to prevent exploitation. Instead, we depend on either government regulation or government ownership. The choice between the two alternatives will be considered in Chapter 15. All that need be said here is that, where competition is impossible, no general case can be made for free enterprise; the decision between government regulation and government ownership depends on the relative effectiveness of the alternatives in a particular set of circumstances.

### Forms of Competition

But what about the areas of the economy where we do rely on competition? It is easy to exaggerate the amount of competition that existed in Adam Smith's day; many small firms in an industry do not necessarily ensure effective competition. In many underdeveloped countries, for example, food is sold at retail by thousands of tiny stores. But if the only transportation open to the average consumer is by foot or by mule, competition among the thousands of stores may be far less effective than among a handful of giant food chains when the average consumer has a car. In short, when the effect of improved transportation and communications in widening the market is taken into account, it is not certain that the effectiveness of competition has decreased since Adam Smith wrote, even though American industry is today organized in far larger firms than it was even fifty years ago.

Admittedly what economists call "perfect competition"—a great many small firms serving a common market—is rarely found today. But then, natural monopolies aside, neither is "monopoly" in the sense of an industry served by a single firm. Rather, in most industries competition is "imperfect" in the sense that the firms involved have some monopoly power and can do things that they would not be able to do if competition were perfect. The crucial question, therefore, is: How much power to monopolize do businessmen have at the present time?

### Gains from Monopoly

Firms with monopoly power presumably have the ability either to charge the public higher prices or to pay the factors of production lower compensation than would be possible if competition prevailed. As profit is the difference between product price and factor cost, the most obvious result of monopoly power would appear to be monopoly profit; but we shall shortly see that this is today almost certainly the least important result of monopoly power. Alternatively, monopoly power may enable an entrepreneur to work less hard—to enjoy, as one economist put it, a quiet life. Though precise measurement is not possible, it seems quite likely that the repercussions of the pursuit of a quiet life on the rate of economic development is the most devastating result of the existence of monopoly power in our economy. Finally, monopoly power may prevent the elimination of costs that consumers would prefer not to incur. Each of these aspects of monopoly is worthy of further consideration. The probable impact of the pursuit of a quiet life on the rate of economic development will be discussed in Section III, while excessive costs will be considered in the following chapter as a part of a general discussion of waste in the economizing process. What remains is for us to estimate the probable importance of excessive profits.

### The Unimportance of Monopoly Profits

Monopoly power is not possessed exclusively by entrepreneurs. The Teamsters Union clearly has some too! But let us confine ourselves to the monopoly power of business. Independent proprietors—using the term to include all kinds of unincorporated business—may in many cases possess monopoly power. But independent proprietors outside agriculture—where competition is generally agreed to prevail (apart from the government's farm program)—received in 1960 less than 9 percent of the national income, two thirds of which appear to have been compensation for their labor, so that hardly 3 percent of the national income was paid for the services of the *property* owned by independent proprietors. It follows that, labor aside, *monopoly* earnings of independent proprietors can hardly be of major quantitative importance at the present time.

What about corporations, which are what most people have in mind when monopoly profits are discussed? Total corporate profits before taxation in 1960 amounted to 11 percent of the national income. But, when the matter is examined in Chapter 12, the conclusion is reached that probably not more than 20 percent, and almost certainly not more than 25 percent, of total corporate profits are the result of monopoly power. It follows that the total additional compensation which corporate owners receive from exercising such monopoly power as they possess is likely to amount to between 2 and 3 percent of the national income. But the federal government receives half of whatever monopoly profits may be earned, as it imposes a tax of approximately 50 percent on all corporate profits. Moreover, it appears likely that an additional amount will be retained by corporations to finance their expansion. As a result, the monopoly power of corporations probably results in an increase in the take-home pay of corporate owners in the form of dividends amounting to less than 1 percent of the national income. Certainly the complete elimination of the monopoly component in corporate earnings would have no noticeable effect on general living levels. In short, Adam Smith's confidence in competition as a safeguard against the natural tendency of businessmen to contrive to raise prices and conspire against the public appears to have been well justified.

# 4 Some Problems in Economizing

## Excessive Costs, Waste, and Unemployment

The unimportance of monopoly profits means that significant improvements in economizing performance must involve the elimination of excessive costs rather than excessive profits. We mean by "excessive costs" the use of factors of production to achieve results which are of little or no benefit to consumers. Where no benefit whatsoever is provided, we may say that the productive effort involved has been "wasted." To provide perspective on the relative importance of various problems, we shall from time to time present estimates of waste. The margin of error involved in these estimates needs to be stressed in the strongest possible terms; in the present state of economics many of them are no more than informed guesses. The case for including anything so tenuous in an introductory text is simply that it appears essential for us to think about the malperformances of our economy in quantitative terms.

Presentation of estimates of waste in a summary section such as this raises special problems because not all the qualifications that surround their detailed discussion can be repeated; on the other hand, their usefulness in providing perspective is never greater. They have, therefore, been included; but their tentative character should be kept very much in mind—even though this warning is not, for brevity's sake, repeated each time an estimate is presented.

Note that, as labor is the most important factor of production, the elimination of waste involves eliminating the jobs of laborers. In a world in which unemployment is often a problem, there is much reluctance to accept proposals which involve the possibility of anyone's losing his job.

But it is scarcity of productive factors—among which labor is most important—which limits our ability to produce with any given technology, so that conserving all factors of production (labor included) is essential if we want to raise our level of living. This conclusion will be considered from a number of points of view at various places in this volume. But, if anyone has preliminary doubts, let him simply ask himself if he believes we would be better off if, to increase the jobs available, we insisted by law that all dirt be dug with hand shovels and moved in wheelbarrows.

Waste due to excessive costs may result either because the consumer is ignorant or because competition is insufficient to ensure that the product is offered without the unwanted costs. Let us first consider excessive costs due to limitations on competition—especially price competition—and then turn to excessive costs resulting from consumer ignorance.

### Excessive Costs Due to Limitations on Price Competition

If monopoly profits are relatively small, how is it possible that there can be limitations on price competition which significantly raise costs? Specifically, monopoly profits generally result from limitations on entry into a particular industry; if prevailing limitations are so minor as not to give rise to significant monopoly profits, how can there be significant limitations on price competition? Why will not new firms offer products at prices that exclude the costs consumers would like to eliminate? The simplest answer is that there is an area of the American economy where price competition is illegal; this is the area where "fair trade" prevails, which is a legally enforceable system under which it becomes "unfair trade" for any retailer to sell below the price established by a contract between a manufacturer and a *single retailer*. But there are many areas of the economy besides those in which fair-trade arrangements are in formal operation where a variety of pressures retard, if they do not prevent, price competition even though entry into the industry is relatively free.

When competition is restricted, costs increase for two separate reasons. First, there is a tendency in such cases for the capacity of producers to be underutilized, which in turn means that costs per unit sold are higher than they would be if aggressive price competition were to drive some of the firms out of the industry and thereby increase the volume of sales of the firms which remained. Second, in an effort to prevent the loss of volume, firms are likely to incur a variety of selling costs, ranging from advertising to elaborate window displays and fancy packaging, and to provide a variety of additional services, ranging from free delivery to deferred payments, which consumers may or may not want.

### Waste under Mandatory Fair Trade

To examine the clearest possible case of limitations on price competition, let us consider an area of the economy where fair trade is mandatory, as is true in the case of the sale of alcoholic beverages in certain states. In New York about 20 percent of the retail price of the average bottle of liquor is retained by the retailer—or around 40 percent of the "economic" cost, for taxes amount to about half of the retail price. In contrast, high-volume, minimum-service stores in the District of Columbia, where fair trade does not exist, receive perhaps 8 percent of price, or 16 percent of economic cost. Besides the high-volume, low-margin outlets there are in the District many low-volume, high-margin "neighborhood" stores; they survive because the extra services they offer—convenience, speed of delivery, availability of ice—are felt by consumers to be worth the additional cost. Such stores may typically retain perhaps 16 percent of price, or 32 percent of economic cost. Suppose that, if mandatory fair trade were completely abolished, residents of New York were to give half their patronage to high-volume stores with 8 percent margins and half to low-volume stores with 16 percent margins, so that the average margin was 12 percent. On this basis mandatory fair trade forces New Yorkers to incur costs which they do not want equal to 8 percent of price (the actual mandatory 20 percent margin less the 12 percent margin they would be willing voluntarily to incur). If the additional cost provides the consumer with no significant benefit, then the waste involved amounts to 8 percent of price, or 16 percent of economic cost.

Note that nothing has been said about retailers' profits. So long as licenses to retail liquor—and therefore entry into liquor retailing—are equally available in New York and Washington, there is no reason for profits to be higher in one area than in the other. For, where entry is equally free, what occurs is that, if prices happen to be higher in one case—as a result of mandatory fair trade or for some other reason—they will simply be offset by higher costs, leaving profits at the same level in the two situations.

### Waste Due to Limitations on Price Competition

There are relatively few areas of our economy where the waste is as large as it is under mandatory fair trade, but there are many areas aside from those with fair trade where there are limitations on price competition. Fair trade, for example, has never been applied to the sale of gasoline, and gasoline prices often vary considerably within the same market. But local price wars frequently end by involving producers, so that price competition, and also the development of new retailing methods such as self-service, are generally discouraged by oil companies. Probably the effects of limitations on price competition are greatest in the area of distribution, because in distribution the possibility of product variation, which is in essence a form of price competition, is severely limited. But effective price competition in the sale of standardized products such as steel or cement may well be lacking at the producer level, and it is obviously lacking where there are extensive and systematic violations of the Sherman Antitrust Act of the sort recently admitted by all major producers of certain types of electrical equipment.

Suppose it were made illegal for any producer or wholesaler to attempt to influence in any way whatsoever the retail price of the products that he sells and the enforcement of the Sherman Antitrust Act was at the same time greatly strengthened in other areas of the economy. How much of a reduction in waste would the increase in price competition be likely to bring about? Recalling the qualifications that have already been made regarding estimates of this sort, we may note that the suggestion is offered in Chapter 13 that, if the proposed changes were made, prices might be expected to drop by as much as 3 to 5 percent within five years and perhaps 5 to 10 percent over a longer period. In other words, the estimates suggest that waste due to excessive costs resulting from inadequate price competition are a considerably more important source of inefficiency in the economizing process than monopoly profits.

### Advertising and Waste

The waste involved in advertising falls between lack of price competition and consumer ignorance. As already noted, advertising provides considerable information—and not inconsiderable misinformation—regarding consumer goods, though the information is, of course, confined to that which producers wish consumers to have. Chapter 9 suggests that, of the 3 percent of the national income currently being spent on advertising, perhaps a third, or 1 percent of income, provides little or no benefit to consumers. On the other hand, it benefits—or at least is believed to benefit—producers. Thus here again we have a case where, to the extent the estimate is correct, consumers cannot dispense with costs they would prefer to see eliminated.

Closely related is the waste that occurs when advertising induces spending on worthless, or practically worthless, products, which Chapter 9 estimates may again amount to as much as 1 percent of the national income. Clearly this merges into the more general problem of the role of consumer ignorance in causing the production and purchase of inferior products, which we shall find is of much greater quantitative importance.

But, in the general case of consumer ignorance, we are dealing with products that, to some extent at least, do meet consumer needs. There are, in addition, products—particularly in the case of patent medicines or a considerable variety of assorted gadgets—that not only are worthless but depend overwhelmingly on advertising for their very existence. For this reason it seems fair to blame the waste involved on advertising, though the remedy is a reduction in consumer ignorance.

## Aspects of Consumer Ignorance

Despite the socialist slogan that socialism produces for use and capitalism for profit, consumer ignorance is not peculiarly, or even especially, a problem of free enterprise. Russian consumers are continually complaining about the poor quality of available goods; on one occasion a Soviet cannery, to meet its production norm, canned not only the meat but also the hide and the hoofs of the cattle it received!

In our economy, consumer ignorance has three main effects. It results in consumers buying products that are not well adapted to their needs; it results in inefficient distribution; and it results in the production of inferior products. In the first case, to the extent that consumers have differences in requirements, an increase in consumer knowledge may conceivably cause available goods to be allocated in such a way as to increase the satisfaction of all concerned. This is the least important aspect of consumer ignorance. Assume, to illustrate the point, that a consumer buys Product A when he would be better off buying Product B. If the consumer would be better off because B is a *generally better* product, there is no clear gain for the economy as a whole when B is bought by one consumer rather than another. Only when B is better for one consumer, who in his ignorance would have bought A, and A is better for another consumer, who in his ignorance would have bought B, is there likely to be an obvious net gain from a redistribution of *existing* goods among consumers as a result of improvements in knowledge. It seems rather unlikely that net gains of this sort will be large.

## Consumer Ignorance and Waste

On the other hand, over longer periods of time improvements in consumer knowledge may have important repercussions on the character of production, both in terms of the design and production of goods and the way in which they are made available to the consumer. Many products made today are badly engineered and sloppily manufactured because the consumer has no way of testing performance before purchase, and no way of judging durability until a long time thereafter. In one test a brand of refrigerator was found to use twice as much electricity as another brand (for the same size unit); over the anticipated life of the refrigerator the increased current consumption might well have cost as much as the original purchase price of the unit. It seems quite clear that lack of consumer knowledge causes products to be produced which provide significantly less satisfaction than would be the case if consumers knew more about the products among which they are trying to choose.

In addition, the way in which goods are distributed, and especially the way in which they are retailed, reflects the prevailing level of consumer knowledge. If the only way open for a consumer to choose among five products is to examine them in five showrooms, then the cost of providing the five showrooms and the salesmen to man them must ultimately be reflected in the price of the product. The quite high portion of the list price theoretically received by the retailer—amounting to as much as 40 percent for the typical appliance—suggests the importance of retailing under present conditions. On the other hand, if the consumer is able to decide what he wants on the basis of information made available by a consumer organization, does not want service, and is prepared to pay cash, then the retailer need do no more than accept the order, deposit the check, and arrange to have the appliance delivered, perhaps from a central warehouse. As the cost of the information supplied by consumer organizations is rather minor, it follows that an increase in consumer information might well make possible an important net reduction in the costs of distribution.

The overall waste resulting from consumer ignorance is by no means easy to estimate. Increases in knowledge will clearly take time to achieve, and providing the knowledge will involve a cost that must be offset against the resulting gain. With the tenuousness of these estimates very much in mind, let us note that Chapter 14 suggests that a massive effort to reduce consumer ignorance might result in the elimination of waste, net of the cost of providing the additional information, amounting to perhaps 3 to 5 percent of the national income within five years and perhaps as much as 8 to 12 percent over a longer period. In other words, the benefits are estimated to be about the same as those likely to result from an intensification of price competition in the short run and rather larger over a somewhat longer period. Overall it appears that increases in price competition and reductions in consumer ignorance offer, by a considerable margin, the greatest opportunities for improving economizing performance under free enterprise.

# 5

# Distribution under Free Enterprise

## The Meaning of Distribution

In this chapter we are interested in how, under free enterprise, the goods and services produced by the economy are distributed to the factors responsible for their production. Note that "distribution" as here used refers to sharing out the goods that have been produced rather than the way in which goods pass from the manufacturer, via wholesalers and retailers, to the ultimate consumer. Modern economies, except in special circumstances, do not distribute actual goods and services; instead they distribute *generalized claims* to such goods and services in the form of *money income.* Thus, by finding out how money income is distributed, we can answer our question as to how goods and services are distributed. Let us first discuss the distribution of income to each factor of production considered separately; this is called the *functional* distribution of income. Then we shall want to consider the *personal* distribution of income to individuals without regard to factor source.

## The Income of Labor

The income that labor receives is determined, as is practically everything else in economics, by "supply and demand." By itself this tells us little, but it does give us a basis for organizing the influences at work. Suppose we start with demand, which summarizes the willingness of people or firms to employ labor. Overwhelmingly the demand for labor is a "derived" demand—derived from what consumers are prepared to pay for labor's contribution to production. This, in turn, depends in part on how much a given unit of labor adds to physical output in any given set of circumstances and in part on what the consumer is prepared to pay for the additional output. In other words, it depends on the additional revenue that an entrepreneur can obtain from selling the output of an additional unit of labor—which economists call labor's "marginal (or additional) revenue product." The derivation of the demand for labor is considered at some length in Chapter 16. But the conclusion, which justifies this preliminary discussion, should now be clear: at least in competitive situations, entrepreneurs are under continuous pressure to pay labor not less than its marginal revenue product, which is *the value of its contribution to production.*

The supply of labor, on the other hand, depends primarily on abilities, training, and preferences. In a world where abilities and training are scarce, a higher wage will usually have to be paid to attract both more and better labor to any particular use. Preferences complicate the picture. Particular occupations may be liked or disliked—either in terms of social prestige or the direct attractiveness of the work—causing labor to be supplied to such occupations at a lower or a higher wage than would otherwise prevail. Teachers, for example, receive less and hangmen more than they would on the basis of training and abilities alone.

To sum up, the price—or "wage"—of labor depends on the demand for labor in a particular use in relation to the supply of labor to that particular use. Note that the conclusion just presented depends on the existence of competition in the labor market. Undoubtedly the labor market is more lacking in competition than any other market of comparable importance in the economy; but it nonetheless seems probable that neither business nor labor monopolies are important enough to cause, from the overall point of view, major divergences of wages from the competitive level.

### Interest on Capital

After labor, capital is the most important factor of production. But does it really make a contribution? Karl Marx argued that labor is the sole source of value and that the receipt of interest by capital simply means that labor is being "exploited" by being deprived of a part of the full reward to which it is entitled. To simplify, let us disregard payments for the use of natural resources. Then labor is indeed the source of all value *if no account is taken of time.* For any piece of existing capital, say, a turret lathe, is nothing more than natural resources—in this case, iron ore—transformed by past labor into a more useful form. But the services of a lathe can only be utilized over a period of time. Suppose a machine, which costs $100 and lasts twenty years, provides services that can be sold for only $5 a year. In this case a businessman would have to pay $100 for the machine and receive back *exactly the same amount* (twenty times $5) over a twenty-year period. As most people prefer present income to future income, it seems likely that very few such machines would be purchased. In fact, even if the services could be sold for $9 a year, relatively few machines are likely to be bought. For the return after setting aside depreciation of $5 a year would only be $4 on a $100 investment, a rate not much different from that offered by government savings bonds. In short, capital receives interest because a return is necessary to induce people to give up present income for income in the future. Labor can, in fact, always receive the full value of its production *if it does not care when it is paid.* Concretely, in the last example it could always end "exploitation" by agreeing to accept for building a machine, not $100, but $9 a year for twenty years.

### Saving and the Rate of Interest

Karl Marx aside, the rate of interest is, as usual, determined by supply and demand. Demand is derived from the "marginal revenue product" of a unit of capital, just as is the demand for labor. Additions to the supply of capital involve saving. Some saving in recent years has been provided by government, and a larger amount by corporations; but the voluntary decisions of individual income recipients are today responsible for most saving. It is the supply of saving to a particular use, relative to the demand for saving in that use, which determines the rates of interest that prevail in the economy.

There are those who believe that the only "valid" decisions regarding saving are those made by individual income recipients; indeed, in the United States, where the supply of saving has generally been felt to be adequate, it is the voluntary decisions of individuals that have been most important. But in economies where the volume of saving determined in this way has been felt to be inadequate, and especially in underdeveloped areas, the government has sometimes taken an active role in influencing the level of saving, either by providing the saving directly or by encouraging the saving of others in the economy.

The case for reliance on the private provision of saving is that it induces those to save who are most willing to exchange present for future income. To the extent that saving is provided voluntarily by those who can most easily save, the overall burden involved in saving would appear to be minimized. But, in view of most people's preference for present income, little reliance on voluntary saving is likely to be possible unless more is returned in the future than is lent today—in other words, unless interest is paid. The case for voluntary saving has recently been recognized by the Soviet Union, which now encourages private saving, allows interest to be paid, and permits limited inheritance of such saving. The volume of saving, however, that the Soviet leaders desire is far larger than the amount forthcoming voluntarily; hence the bulk of saving in the Soviet Union is provided by a variety of devices which depend on compulsion.

### Economic Rent and Natural Resources

Natural resources are those things useful in production which are made available by nature; for their economic contribution they receive "economic rent." But why should things made available by nature—which would remain available whether or not they were compensated—receive the value of their economic contribution? This was the question raised by the American economist Henry George, who came to believe that the payment of economic rent was the source of most of the evil in the world and proposed a single tax on such rent which he believed could be used to pay the entire cost of government.

In principle there is no answer to George; no social purpose is served by compensating the private owners of resources made available by nature. Obviously, when private compensation is allowed, efforts by private owners to obtain the highest possible compensation for the resources they own ensure that resources will be put to the use in which they make the largest economic contribution. So long as sufficient compensation is retained by private owners to make it worth while owning resources at all, cannot taxation take the remainder? The objection to any such proposal is entirely practical, for economic rent is extraordinarily difficult to determine. Take the case of farm land: a large part of its value stems, not from the original and unbroken prairie, but from the capital that has been invested in breaking, ditching, draining, and fertilizing the virgin land. But, if the tax were set high in the hope of capturing most of the economic rent, it might well discourage capital investment; on the other hand, if it were set low, it would hardly justify the administrative effort inevitably involved in levying and collecting the tax. George would have been greatly upset to learn that total economic rent is quite small—and the yield of a tax on economic rent, of course, even smaller. Detailed estimates are not available, but it seems quite unlikely that economic rent as a whole amounts to as much as 2 or at most 3 percent of the national income. Hence, even if government were to receive all the economic rent that is paid, it could not exist on a single tax; many others would be necessary to meet the present-day costs of government.

### The Actual Functional Distribution of Income

We have briefly considered the basis for payments to labor, capital, and land. Let us now turn to the actual functional distribution of income. In 1960 labor received 78 percent of the national income, and property—capital and natural resources combined—the remaining 22 percent. Sixty years ago the shares were in the order of 70 and 30 percent. About two thirds of the increase in the share going to labor can be explained by plausible assumptions regarding the impact on the economy of the decline in the importance of agriculture and the increase in the importance of government. But many other influences, not all of them fully understood, have also been at work.

Corporate profits make up about half of all property income, with the remaining half going in three roughly equal shares to net interest, rental income of persons, and proprietors' property income. Interest represents compensation of capital lent to business by creditors (in contrast to profits received by owners of capital); rental income of persons is the return on real property (particularly real estate) received by individuals; and proprietors' property income represents the return on the property of unincorporated businesses. The share of income going to all property except corporations has declined since 1900 from 24 to 11 percent. Although the corporate share increased to a peak of 15 percent in 1950, it has since declined significantly and today accounts for rather less than 11 percent of the total, making, as we have seen, a total for all property income of 22 percent.

### Benefits of Redistributing Property Income

How much better off would labor be if there were some miraculous way by which the income received by property could be given to labor without the total being reduced? The answer is complicated because property incomes pay relatively heavy taxes and provide relatively large amounts of saving—both of which are clearly socially necessary. This is especially true in the case of corporations: about half of their profits go in taxes to the federal government and almost half of the remainder is saved, so that the dividends paid corporate owners amount to only about 3.5 percent of the national income. There are, in other words, differences between the distribution of income and the distribution of consumption. Chapter 18 argues that the benefit of redistribution is better measured by consumption than by income, but let us look at both alternatives.

If all property *income* were redistributed to labor, labor incomes as a whole would rise by 28 percent.[1] Note that this increase involves the complete elimination of *all* benefits from the private ownership of property, including interest on savings accounts and life insurance and returns from owning houses. But even the complete elimination of benefits of property ownership would result in an increase in labor's *consumption* of only about 17 percent. This is about equal to the average increase in real income per man-hour that has occurred every eight years since 1875.

What about corporations considered separately? Ownership of corporations is highly concentrated; the top 1 percent of income recipients receive about half of all corporate income. What would happen if all corporate profits were redistributed to labor? The answer is that the *income* of labor would increase by 14 percent.[2] But, because of the importance of corporate taxation and saving, if the owners of corporations were to consume nothing whatsoever, the *consumption* of labor would increase by only about 3.5 percent—or less than the average increase in output per man-hour that has taken place every two years since 1875.[3] It seems fair to conclude that, even if Marx were right that property in general and capital in particular are nothing but devices to "exploit" labor, he would nonetheless have to admit that the "exploitation" has in fact turned out to be of relatively minor importance!

## The Personal Distribution of Income

Now let us turn from functional to personal distribution of income—distribution without regard to whether the income derives from labor or property. Actually we shall be interested in distribution among "spending units." Such units "pool" their income: some are individuals living alone, most are families with a single income recipient, and some have two or more income recipients. Let us concentrate on personal rather than national income, as personal income is what is actually available to a spending unit in any period; we shall, in short, be discussing the personal distribution of personal income among spending units.

From one point of view income is highly concentrated: the bottom 20 percent of income recipients receive only one quarter, and the bottom 40 percent only four fifths, as much income as the top 5 percent. But, despite this concentration, the benefits of redistribution from the "rich" are severely limited. To show how little is involved let us examine what would happen if all income in excess of two and a half times the average income per spending unit were taken from those who now receive it and given to those with incomes below the cut-off point. At present the average income per spending unit is approximately $6,000, so that the proposal amounts to allowing no one to receive income in excess of $15,000. Overall, a redistribution of this size would increase the incomes of those with less than $15,000 by only 10 percent. But those in the higher brackets pay a larger percentage of taxes than the average unit pays. When allowance is made for the differential impact of taxes, it appears that the proposed redistribution would increase the incomes of those below the cut-off point by only 7 percent. Nor is this all. Those in the higher brackets do most of the saving. As a result, cutting them down to two and a half times the average would permit those below the average to increase their consumption by less than 5 percent. It seems fair to conclude that general living levels cannot today be significantly increased by redistribution from the "rich."

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[1] This percentage is derived by dividing total income (100) by labor's present share (78).

[2] This percentage is derived by dividing labor's present share plus profits (89) by labor's present share (78).

[3] The basis for both conclusions regarding redistribution of consumption is explained in Chapter 18.

### The Change in Income Distribution

The smallness of the present benefits from redistribution reflects major changes in the distribution of income even before taxes, and, of course, even greater changes when allowance is made for the impact of the progressive income tax. We have no estimates for the United States, but Simon Kuznets, an authority on national income accounts, has estimated that the top 5 percent of income recipients in Great Britain received 46 percent of total income in 1880. Let us assume, first, that a similar distribution existed in the United States at that time and, second, that the taxes in effect in 1880 did not redistribute income. To the extent that these assumptions are correct, it follows that the bottom 95 percent of the population received 54 percent of the aftertax income in 1880. By 1950 the percentage of aftertax income received by the bottom 95 percent had risen to 83 percent. This means that redistribution over the seventy-year period *by itself*—in other words, even if there had been no change in the level of income—would have increased the average incomes of the bottom 95 percent of the population by 54 percent.[4] In short, income distribution left a great deal to be desired at the time Marx wrote; but the immense changes that have taken place since that time have greatly reduced the importance of the entire matter.

[4] This percentage is derived by dividing the 1950 percentage (83) by the 1880 percentage (54).

### The Desirability of Further Redistribution

Would further redistribution be desirable? The two main arguments for inequality of income are that it is essential to provide *adequate saving* and *adequate incentives*. When the matter is examined in Section II, the case for inequality to provide saving is found to be rather weak; better methods appear available than to provide the rich with $4 of income in the hope that they will save perhaps $1. On the other hand, the case for inequality to provide incentives appears to be rather strong; it seems unlikely that able people can be induced to work with socially desirable intensity and effectiveness unless they receive rewards that are significantly larger than the average level of incomes.

### Redistribution to Those in the Lowest Income Brackets

Stress has thus far been placed on the smallness of the benefits of redistribution from the "rich" that is likely to be possible without adverse effects on the performance of the economy. But what about the plight of those at the lower end of the scale? The same sum that would increase the incomes of everyone under $15,000 by a mere 11 percent would increase the incomes of those under $6,000 by 30 percent, those under $4,000 by 70 percent, and those under $2,000 by 360 percent! A strong case can be made for further redistribution to those at the bottom of the income scale; but an examination of the spending units involved suggests that the problem is at once more complicated and less urgent than might at first appear.

Over half of those with incomes below $2,000 are individuals living alone; close to a third are over sixty-five; and a significant number are noncommercial farmers. The first group, for example, includes students contributing to their own support by part-time employment while completing their education. Again, a retired couple with social security benefits of $100 a month and interest at 3.5 percent on savings of $20,000 would fall in the second category. And the problem of inducing an Ozark "hillbilly" to give up farming and work in a factory is hardly a problem of income distribution in the usual sense!

Put the other way round, a retired couple with assets, even though their reported income is less than $2,000, may well be significantly better off than a man with an income of $4,000 who has a wife and three children and a job that requires him to live in a large city. This does not mean that, in an economy as productive as ours, we should not do more for those at the lower end of the income scale. Rather, it means that what is required is not redistribution in the usual or statistical sense but, instead, an expansion of our social security and welfare arrangements to meet the complicated practical problems that are involved in providing everyone with whatever society agrees upon as an appropriate minimum level of living.

# 6

# The Overall Logic of Free Enterprise

## Economic Balance

How can an economy economize—allocate its scarce means of production among alternative uses—so as to maximize material satisfactions? When economizing was defined in Chapter 1, it was pointed out that allocation of scarce means among alternative uses by an economy is quite similar to the allocation of a consumer's given (scarce) income among the many (alternative) uses to which it can be put. (In fact, economics was originally known as "political economy" to distinguish it from "household economy," for it was in households that people first began thinking about economizing.) To simplify, let us disregard taxes and saving both for the economy and the consumer and start by examining the balance that a consumer must achieve if he is to maximize the satisfaction he derives from the goods he buys with a given income. If we can understand the balance that a consumer must achieve, we will be well on the way toward understanding what an economy must do, for any economy—no matter what its type—must achieve a similar balance if it is to maximize material satisfactions.

## Economizing by Consumers

Ask the average consumer how he allocates his income and he will probably reply that he sets aside enough for "necessities" such as food and rent and then spends the rest on various "luxuries." If this were all that was involved, spending one's income would be quite simple. But the fact of the matter is that, if a consumer is to achieve maximum satisfaction, *the satisfaction provided by the last dollar spent on each necessity must be the same as the satisfaction provided by the last dollar spent on each luxury.* The student who understands the full implication of this statement will be well on his way toward becoming an economist!

Consider a consumer who spends his $4,000 income as indicated in Table 6-1. The two necessities may be things he has to buy in order to live, whereas the two luxuries may be quite frivolous things he could easily do without. Yet if he concludes that distributing his income in the manner indicated will *maximize the satisfaction it gives him,* it follows directly that the eight hundredth dollar spent on A, and the fourteen hundredth dollar spent on B, the twelve hundredth dollar spent on C, and the six hundredth dollar spent on D must all yield the same (or approximately the same) satisfaction. For, if the six hundredth dollar spent on D were to yield appreciably more satisfaction than the eight hundredth dollar spent on A, then spending $601 on D and $799 on A would *increase* total satisfaction, and the pattern of spending in the table cannot have been the one which maximized satisfaction. Hence—and this is the point to be stressed—when the pattern of spending is in fact the one which maximizes satisfaction, then the last or *marginal* dollar spent on every alternative must yield the *same* (or practically the same) satisfaction.

TABLE 6-1

Balanced Consumption

(In dollars)

| | |
|---|---|
| Necessity A | 800 |
| Necessity B | 1,400 |
| Luxury C | 1,200 |
| Luxury D | 600 |
| | 4,000 |

Anyone who does not like to think in terms of letters and numbers may grasp the essence of what is involved by thinking about what a couple do who sit down to budget their joint income for the coming year. They will continue to adjust expenditures between categories until they conclude that no increase in their total satisfaction will result from further shifting. But this must mean that the marginal dollar spent on any category provides approximately the same amount of satisfaction; otherwise, further shifting would bring about an increase in total satisfaction.

Certain aspects of this analysis are worth emphasizing. First, it applies to a *given income in a given period.* Second, it applies only to a *given set of tastes;* if tastes change, the desirable allocation of spending will also change. Third, the analysis applies with precision only to items which are *consumed in quantity*—such as bottles of milk or loaves of bread—so that there is not much change in the satisfaction provided by adjacent units. The adjustment is much less precise for such items as cars or washing machines, where only one unit is typically consumed (though this point becomes relatively unimportant when the analysis is applied to the economy as a whole). Finally, the balance discussed will apply only if the consumer budgets his entire income and sticks to his budget. If, as a result of "impulse buying" or for some similar reason, he departs from his projected pattern of spending by spending more on one item than he planned to spend, it will be necessary for him to readjust his spending among the remaining alternatives if he is to achieve maximum satisfaction from the income that remains to be spent.

### Maximizing Social Satisfaction

For the economy as a whole the equivalent of the consumer's given income is the given supply of the scarce factors of production, whereas the alternatives include all possible kinds of consumption goods and services (still disregarding taxes and saving). To simplify, let us start by assuming that the *only factor of production is labor* and that *all workers are identical and therefore receive the same compensation.* This makes the problem quite similar to the one faced by consumers, who receive their income in the form of identical dollars. Given a single factor, what an economy must do—be it free enterprise, socialist, or some mixture of the two—is to allocate labor among all the things that can be produced so as to maximize social satisfaction. But a maximum of social satisfaction will not be achieved until *the contribution to social satisfaction of the marginal laborer is the same in all possible uses.*

An actual example may help to make clear exactly what is involved. The War Production Board in 1942 knew quite precisely how much steel would be available (because it was generally agreed that we could not count on the war lasting long enough to make it desirable to increase steel-making capacity). The board's problem was to determine, given the limited quantity of steel, how steel could best be used to maximize our war effort. This involved deciding not merely that steel for the maintenance of rail transportation was generally more important than steel for razor blades, but how to allocate steel so that the last ton made available for rail maintenance made the same contribution to the war effort as the last ton applied to the production of razor blades. Those charged with planning the use of steel did not find it easy to compare the contribution of a ton of rails in reducing the likelihood of a train wreck with the contribution of a ton of razor blades in eliminating the bad tempers caused by shaving with dull blades! Yet decisions of this sort—only infinitely more complicated—have to be made routinely by all types and kinds of economies, and, hopefully at least, made in such a way as to maximize social satisfaction.

### Three Basic Assumptions

*Provided that we are prepared to accept the validity of three basic assumptions,* it can be shown that social satisfaction tends to be maximized under free enterprise. It is not easy to demonstrate that this is so: some rather close reasoning is involved and the demonstration may have to be read more than once. But the attempt is well worth making for the light it throws on the overall logic of free enterprise. Let us still confine the discussion to consumption and temporarily continue to treat labor as the only factor of production.

The first basic assumption is that, once the government has established certain rules and regulations, *we accept the way in which consumers spend their income as properly determining what the economy should produce*—in brief, that consumers know what is best for them. Second, let us assume that *competition is sufficiently vigorous to eliminate excessive profits, excessive costs* (in the sense of costs that consumers do not wish to pay), *and exploitation of labor* (in the sense of payments to workers below what they would receive under fully competitive conditions). Finally, let us assume that *income should be distributed among workers on the basis of the contribution they make to production.* It should be clear from the preceding discussion that many today are not prepared to accept these assumptions in full. What we want to do at this point is to see what would follow *if* these assumptions could be accepted as correct.

### The Overall Logic of Economizing

Recall that the allocation of labor is ideal when the social contribution of the marginal laborer is the same in all possible uses. Our task is to show that there is a tendency for this result to be achieved under free enterprise. Two steps are involved in the demonstration. First, we must find some way of establishing the social contribution of the goods produced by each marginal laborer in order that they may be compared. This is provided by the first of the basic assumptions, which suggests that the social contribution of goods and services can be measured by the money value consumers are prepared to pay for such goods and services. This, in turn, permits us to say that social contribution will be maximized and allocation, therefore, ideal when the *money value of the goods* produced by the marginal laborer is the *same in all possible uses* to which laborers can be applied.

The second step is to demonstrate that efforts by businessmen to maximize their profits tend to equalize the money value of the goods produced by the marginal laborer in all possible uses. Recall that, to simplify, we assumed all laborers to be identical and to receive the same compensation. In this case the only stable situation is one in which the value of the goods turned out by the marginal laborer in any use is identical with the value of the goods turned out by the marginal laborer in all other possible uses. For if the goods produced by a laborer—identical in cost with all other laborers—are worth more when the laborer is used to produce A rather than B, it follows that the difference between the value of the product and the cost of the laborer is greater in use A than in use B. But this difference is the businessman's profit. So long as he can make more profit in producing A than B, he will tend to use more laborers in producing A than in producing B. In a dynamic world he may never achieve balance, but he will not give up trying to shift laborers until the money value of the goods produced by the marginal laborer is the same in all possible uses.

### The Entrepreneur and the Budgeter

If a budget is to provide maximum satisfaction, the budgeter must rearrange marginal spending among available alternatives until the same spending yields the same satisfaction in all possible alternatives. The essence of the free enterprise solution to economizing is that the entrepreneur, in the pursuit of profits, shifts factors among available alternatives until the same factors yield the same money value of output in all possible alternatives. Continuing to treat labor as the only factor of production, we can use the figures contained in Table 6-1 to illustrate the point just made. Assume that an economy has 4,000 laborers and four uses to which labor may be applied, that competition among employers has resulted in a wage of $10 a day, and that a profit of $1 per laborer is the minimum that an entrepreneur feels justifies the bother of hiring a laborer. Then labor will be shifted among A, B, C, and D until the value of the output of the marginal laborer in each use is $11. For, if $10 of labor in any use produced a product worth $12, entrepreneurs would be receiving more than their minimum acceptable profit and would apply more laborers to the use in question; moreover, if $10 of labor produced in any use a product worth only $10, entrepreneurs would be receiving less than their minimum acceptable profit and would apply less laborers to the use in question. If the ultimate equilibrium is that given in Table 6-1, it means that the value of the output of the eight hundredth laborer producing A, the fourteen hundredth laborer producing B, the twelve hundredth laborer producing C, and the six hundredth laborer producing D *must all be $11.*

## The Balance among Factors of Production

One complication thus far avoided, to which we shall shortly return, is that laborers are not uniform and are not indifferent about where they work. More immediately important is the fact that balance must be achieved, not merely for labor alone, but for capital and land as well. The matter, moreover, is complicated because there is a range determined by available technology over which capital and land may be *substituted* for labor (or vice versa). Detailed discussion of how balance among factors is achieved is beyond the scope of an introductory presentation such as this.[1] But the essence of the matter is, once again, that the entrepreneur, in the pursuit of profits, tends to substitute one factor of production for another so long as the value of the output of any factor, relative to its cost, is greater than that of any other factor relative to its cost. Thus the pursuit of profits by entrepreneurs tends to bring about not only the balanced use of one factor among all possible alternatives, which is the point being discussed, but also *balance among factors in any given use.* In other words, a factor is not merely allocated among A, B, C, D, so as to maximize results, but factors will tend to be substituted for each other in the production of A so as to ensure that *any given output of A is produced with the least possible use of land, labor, and capital.* We have devoted relatively little attention to the need for balance among factors in a particular use, concentrating instead on balanced allocation of a factor among uses; but efficient economizing obviously also requires balance among factors within each use.

## The Logic of Distribution under Free Enterprise

Now let us turn to a new subject. Even if we grant that the pursuit of profits by entrepreneurs yields a balanced use of our scarce factors of production, is there any reason to believe that the resulting production is properly distributed among the factors involved? As income is equal to the value of the goods and services produced, our problem is to show that income is properly distributed. The third basic assumption suggests that income is properly distributed when factors receive the value of their contribution to production. But when competition is sufficiently vigorous to eliminate exploitation, as it was assumed to be by the second basic assumption, then businessmen will be under pressure to pay each factor of production no less than, and no more than, the value of its contribution to production. Concretely, in discussing the use of 4,000 laborers, we reached the conclusion that they would be allocated among alternatives A, B, C, and D in such a way that the value of their marginal output would in each case be $11. If we deduct from this the profit of $1 which we assumed was the amount required to induce entrepreneurs to provide employment, it follows that the value of each laborer's contribution to output is $10; it is this—the value of his contribution to production—which, under competition, will tend to be paid each laborer.

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[1] The matter is elaborated in Chapter 16, especially Appendix B.

The thoughtful student may recall that we started out by assuming a wage of $10 and used it to explain the value of output of each marginal laborer. Now we have reversed the process and used the value of the laborer's output to explain his wage. Are we engaging in circular reasoning? Not at all. The wage that a laborer has to be paid influences the use to which the laborer will be put, which in turn influences the value of the output the laborer produces, and, therefore, the wage which the laborer must be paid! In other words, *the process is itself circular*—or, more elegantly, *the factors within an economy are interdependent.* For it is always possible that a higher wage may cause a substitution of capital for labor, so that the wage of labor depends in part upon the price and availability of all other factors. The classic example of interdependence is a glass filled with marbles: the position of one marble depends on the position of all other marbles in the glass, but equally the position of all other marbles depends on that of the one marble. In the last analysis the same is true of any economic system; in all economic problems the fact of interdependence needs to be kept very much in mind.

### The Logic of Payment According to Economic Contribution

Thus, where competition prevails, each factor of production tends to be paid the value of its economic contribution. But is this necessarily desirable? Specifically is there any reason why labor should be paid on the basis of economic contribution? It seems clear that economic and social contribution are not always the same; few would argue that the social contribution of a prize fighter paid $500,000 is necessarily greater than that of a preacher paid $5,000. There are those who believe that a man has a "natural right" to the value of his economic contribution, but such a belief is not easy to defend. Rather let us consider payment on the basis of economic contribution as a *social arrangement* with many practical advantages, but acceptable only where certain basic requirements have been met. It is, for example, only likely to be acceptable in a society where men typically marry and accept an obligation to support their wives and children. In almost every case where the birth rate has dropped to the point at which preservation of the population is in doubt, "family allowances," or similar arrangements, have been introduced to reward a man for his production of children as well as for his production of goods and services. Moreover, and more immediate, most modern economies show, by systematically modifying it through the use of progressive income taxes, that they clearly do not consider our basis of payments ideal.

## The Benefits of Payment According to Economic Contribution

If not necessarily ideal, what practical benefits result from payment according to economic contribution? Two things are achieved: the available labor supply is allocated among available jobs without the use of compulsion, and the effectiveness of labor tends to be maximized. There is no reason why the jobs available as a result of the goods and services people want should bear any relationship to the jobs people want. Few people want to remove garbage; many wish to have garbage removed. Many people want to be portrait painters; few wish to be painted. The problem of matching jobs and job seekers is solved by offering labor *what consumers are prepared to pay for its contribution in various alternative uses.* Note that the resulting adjustment works in both directions. If labor demands a high wage for removing garbage, the amount of garbage people will want removed may be reduced; vice versa, if paintings are available at a low price, more people may decide to be painted. The ultimate result is a balancing of what laborers would like to do with what consumers would like them to do, until without compulsion available jobs coincide with available workers.

Second, the supply of labor can, to some extent, be expanded or contracted. Much more important, the intensity and effectiveness with which labor works can vary over a wide range. By paying labor the economic contribution of more intensive or more effective efforts, a strong incentive is provided for labor to maximize the intensity and effectiveness with which it works. Overall, this system of payments is so useful that, as we shall see, it has been adopted by the Soviet Union.

### The Logic of Consumer Sovereignty

Let us conclude by presenting briefly the logic that underlies allowing consumers to establish production objectives. Note, first, that modern economies rarely distribute actual goods and services; instead, they distribute generalized claims to goods and services in the form of money incomes, so that consumers establish production objectives by the way in which they spend their money income. Note, second, that under free enterprise there is a tendency—at least where competition prevails—for the goods and services available in the market to have prices attached to them which reflect the *cost of the scarce productive factors used in their production.* Recall, finally, the first basic assumption that consumers know what is best for them. When money income is used by consumers, who know what is best for them, to choose among goods priced to reflect their factor cost, individual consumers can be expected to choose *that combination of goods and services which will maximize the satisfaction they receive from the claim to the services of the scarce productive factors their income represents.* It follows that this procedure *tends to maximize the satisfaction that consumers as a whole receive from the services of the scarce factors of production to which they are entitled.*

What this rather extended—and not always easy—discussion adds up to may now be briefly summarized. *If* consumers know what is best for them, *if* competition is strong enough to ensure that each factor receives the value of its contribution to production and that excessive profits and excessive costs are eliminated (so that businessmen make profits equal to no more than the value of *their* contribution to production), and *if* income is best distributed on the basis of contribution to production, then allocation under free enterprise *tends toward the ideal.* It follows that most of the criticisms of free enterprise are in reality *criticisms of the validity or acceptability of the three basic assumptions.* We shall, therefore, want to devote special attention to the basic assumptions in the detailed discussion of economizing presented in Section II.

# 7

# An Introduction to Economic Development

## Economics and Economic Development

The last four chapters summarized some basic aspects of economizing under free enterprise. Economizing is primarily concerned with the behavior of an economy at an *instant* of time, while economic development is interested in its behavior over a *period* of time. Actually a period of time is nothing more than the sum of a series of instants of time, so that the matters with which economic development deals—such as research performance, innovation, and capital formation—can be considered as a part of the effectiveness of economizing at an instant of time. But, in practice, they are not subjects typically considered in the usual discussions of economizing, nor are they matters on which much insight is provided by the tools we have developed to understand economizing.

Economic development appears, in fact, to be more closely related to the fluctuations in output and income with which Section IV is concerned. Once the factors responsible for determining the level of income have been formulated, it is logical to go on to consider means for achieving a steady and regular growth of income. Although this matter has recently received considerable attention, the work done has concentrated mainly on discovering patterns of growth capable of explaining fluctuations in output and employment. In discussing economic development, on the other hand, we are primarily concerned with the *reasons for differences in the rate of increase in the output of goods and services when the productive factors are fully employed.* In other words, we are interested in the rate of increase in productivity between periods of full employment—"productivity" being defined as output (of goods and services) per unit of input (of the scarce factors of production).

### What Has Been Achieved in the United States

Let us start by comparing the United States in 1875 and 1960. To make the comparison possible, the goods and services produced will in each case be valued in the prices that prevailed in 1960. We shall, in other words, be comparing *real income,* which, as noted in Chapter 2, summarizes *actual quantities* of goods and services *unaffected by changes in prices.*

The changes that have taken place between 1875 and 1960 are summarized in Table 7-1. In 1875, the United States was a country of 46 million people with an annual income of $21 billion, which gave an average income per worker of about $1,350 and per person of about $450. To earn this income the average worker put in roughly six eleven-hour days and received 42¢ for each hour he worked. Eighty-five years later, in 1960, we were a nation of 180 million with a total income of $417 billion, which works out to an average per worker of $5,700 and an average per person of $2,300. To earn this income, the average worker put in five eight-hour days and received just under $3 for each hour he worked. At the end of the period, population was 4 times, income 20 times, income per worker 4.25 times, and income per person over 5 times larger than it had been at the start. And each hour that the average American chose to work in 1960 yielded him almost 7 times as large a quantity of goods and services as the hour put in by his fore-estimates; for it is not easy to imagine a world in which the average father in 1875. It is not easy to understand the implications of these American had less than 20 percent of the goods and services he has today. But that is the situation which existed just eighty-five years ago.

**TABLE 7-1**

**Measures of Economic Development**[a]

| Year | Population (Millions) | National Income (Billions) | Income per Worker (Dollars) | Income per Person (Dollars) | Income per Man-Hour (Dollars) |
|---|---|---|---|---|---|
| 1875 | 46 | 21 | 1,350 | 450 | 0.42 |
| 1960 | 180 | 417 | 5,700 | 2,300 | 2.85 |

[a] For details, see Tables 28-1 and 28-2.

### What Has Been Achieved Elsewhere

Increases of this magnitude are neither universal nor automatic. Great Britain, for example, had a level of living in 1875 probably not much lower than that of the United States at that time. But a slower rate of economic development has led to an average income level in 1960 that is roughly half that of the United States, a workweek that is a day longer, and an income per hour of work that is less than 4 times rather than 7 times larger than it was in 1875.

In Russia, the rate of development since the turn of the century has not been particularly impressive; in fact, there is evidence that Russia was farther behind the United States around 1955 than it had been in 1913. But it also appears that during *favorable periods* the Soviet Union has developed significantly faster than the United States—roughly as much as twice as fast. The actual rate realized by the Soviet Union over the whole period seems of little significance for the future unless it is anticipated that Russia will again experience two devastating wars and a revolution. On the other hand, it is an open question as to whether Russia will or will not be able to maintain in the future the rate of development achieved during favorable periods in the past.

Although production has increased noticeably in many countries, it is by no means certain that living levels in countries containing perhaps half the world's population are significantly higher than they were in 1875. In such countries living levels have not risen because the increase in production has been offset by a roughly equivalent increase in population, leaving living levels at the end of the period little different from what they were at the start.

### The Importance of Small Differences

If the United States continues to develop at the rate achieved from 1875 to 1960 until the year 2000, then in that year average income per person—still measured in terms of the prices that prevailed in 1960—will be around $5,000, average income per worker over $11,000, and average income per family (allowing for some further increase in the percentage of those working) perhaps $17,000 or $18,000. Moreover, all this will be possible with a workweek of no more than thirty hours.

Differences in rates of development which appear trivial in any year can produce spectacular differences over even relatively short periods of time. For example, the rate of increase in income per person—continuance of which will lead to an average $5,000 income in 2000—was just under 2 percent a year over the period from 1875 to 1960. If instead of continuing at 2 percent the rate were to fall to an average of 1.5 percent a year for the next forty years, average income per person in 2000 would be about $4,200. But, if the rate were to rise to 3 percent, the level in 2000 would be over $7,500. Again consider a person who started work at twenty-five in 1960 at two thirds the average annual income in that year and retired at sixty-five while earning 125 percent of average annual income in 2000: the difference between a 1.5 and a 3 percent rate will determine whether he starts at $3,800 and achieves $13,000 before retiring, or whether he starts at $3,800, reaches perhaps $10,000 to $12,000 by the time he is forty-five and retires with earnings of $23,000! Again the difference between Great Britain and the United States from 1875 to 1960 in the behavior of income per man-hour—perhaps the most significant single measure of economic development—is the result of a 1.6 percent rather than a 2.3 percent average annual increase in income per man-hour.

### What Rapid Economic Development Involves

In short, the results of rapid economic development are spectacular. What is involved in achieving rapid economic development? There is likely to be relatively little agreement on the answer. For, although economic development has been of concern to economics for a long time, only relatively recently have efforts been made to formulate systematically the factors responsible for rapid development. Thus this brief summary—and, indeed, the entire discussion of Section III—is subject to a far wider margin of error than prevails elsewhere.

Let us start by considering what has been responsible for economic development in the past. In 1950 each worker was working with three times as much capital as a worker in 1875. How important was the increase in capital in explaining the increase in output that had taken place? Estimates suggest that the increase in capital by itself would have brought about an increase in output of not more than 15 to 45 percent compared with the 250 to 300 percent increase that actually took place.[1] In other words, our level of living would not be much different today from what it was in 1875 if we were restricted to the products and technology in existence at that time—even if all the products were better made as a result of the increased availability of capital.

[1] For details, see Chapter 29.

### The Role of Improved Technology

Is it, then, the development of new or improved products and new and improved techniques of producing them that has been responsible for the rise in our level of living? In the main but not entirely. Workers, for example, may be better educated and more generally effective today than workers in 1875—even if more prone to demand coffee breaks. When all such other factors have received appropriate allowances for their contribution, it appears that overwhelming credit must still be given to "improvements in technology" defined to include both products and processes. Improvements in technology, in turn, depend on the development of improvements by means of both basic and applied research and their introduction into the productive process by means of innovation. A major part of the discussion of economic development, therefore, will be given over to a consideration of the factors responsible for effective research and innovation. We shall find that there is no reason why the socially desirable amount of research or the socially desirable rate of innovation will necessarily occur under free enterprise. It will be suggested, therefore, that this is an area where the case for government concern with the performance of the economy is particularly strong.[2]

### Other Factors in Economic Development

Although capital formation is, as we have just noted, likely to be relatively unimportant by itself, replacement of existing capital must take place at a rapid rate if improved technology is to be utilized. Where population is increasing, where an economy starts from a low level (as in underdeveloped areas), or where an economy is developed very rapidly (as in the Soviet Union), additions to the existing stock of capital are essential.[3] Hence capital formation in general and net capital formation in particular have an important contribution to make to economic development. On the other hand, the quantity of natural resources available in a country, at least in a world where trade is free, is of considerably less importance than might be supposed. The Swiss living level, for example, appears to be the highest in Europe, despite the fact that Switzerland has few natural resources except superb scenery. So long as a nation has something which the rest of the world wants—the classic example is the Swiss watch—and so long as the rest of the world is willing to trade

[2] See Chapters 29 through 32.

[3] Additions to the existing stock of capital can be described as net saving, net investment, or net capital formation—all of which are the same.

freely in natural resources, lack of specific resources is unlikely to have any important effect on living levels. Finally, there are a host of factors—many of them going far beyond the conventional confines of economics—which influence economic development. To mention only one, economic development inevitably involves change. Hence people who dislike change are likely to resist it—and therefore develop far more slowly—than people who like change and enjoy new and different ways of doing things.[4]

To summarize, economic development is a complicated process by no means fully understood. It appears that primary credit must be given to the development of improvements in products and processes by means of basic and applied research and the introduction into actual production of such improvements by means of innovation. Rapid replacement of capital is necessary to make innovation possible, so that, in rapidly growing economies or in those just starting to develop, net capital formation also plays an important role. Natural resources, which are undoubtedly helpful, are less vital—at least in a world where trade is reasonably free. These appear to be the main economic factors responsible for economic development, but there are many other factors which also play a role in development.

### Population and Economic Development

In the discussion of developed areas in Part II of Section III, little will be said regarding the influence of population growth. Primarily the reason is that population growth does not seem to raise pressing problems for the three countries on which attention is concentrated: the United States, the Soviet Union, and Great Britain. In the first two cases, population density is low, and in the last case, population growth is slow. Specifically, the present rate of growth in the United States, if continued, will mean a population of around 0.3 billion in 2000, 0.6 billion in 2050, 1.2 billion in 2100, and 2.4 billion in 2150. In other words, in 200 years at the present rate of growth our population will be equal to the present population of the world. Undoubtedly adding hundreds of millions to our numbers would involve some major changes in our way of life. But the 600 million that would be living in the United States in 2050 would bring a population density of only perhaps a third of that presently prevailing in England, so that growth of our population to 600 million may well be possible without repercussions on the *aspect of living levels measured by estimates of real income*. Rather, population growth is first likely to have an impact on the *quality of life*. Justice Holmes once said that one man's right to swing his fist stopped with his neighbor's nose. The character of our life and the quality of our liberties will inevitably change as the noses get closer.

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[4] The last three aspects of economic development are discussed in Chapters 33 through 35.

A completely different situation applies in many underdeveloped areas. In India the land available per person today is only 80 percent, and in Japan 40 percent, of the land that would be available per person in the United States were our population to reach 600 million. Ultimately cessation of population growth over the world as a whole appears inevitable; continuance of the present rate of world-wide growth would reduce the land available per person over the entire world from the present 650,000 square feet to 1 square foot—"standing room only"—in less than a thousand years. But currently the rate of population growth is increasing, not decreasing. Until recently it was generally believed that development would inevitably lead to a decrease in population growth. It is no longer clear that this is so; development has drastically reduced death rates by eliminating starvation and disease without appreciably affecting birth rates. In fact, four of the five richest nations in the world have populations which are increasing more rapidly than the world average, and the world average itself continues to rise. Only in Japan has there been a major decline in birth rates, and this has been achieved in the main by widespread use of abortion, an alternative not open to underdeveloped areas with less adequate medical facilities.

### Results of Continued Population Growth

Continued population growth has two aspects. First, the length of time during which population continues to grow will largely determine the sort of living levels that will prevail when significant growth ultimately and inevitably comes to an end. For example, it appears that India could provide its present population with a diet as varied and complex as that consumed by Americans if the area under cultivation could be increased by 50 percent and yields per acre raised to three times the level prevailing in the United States—both of which seem, given enough time, possible accomplishments. The Indian population has recently been increasing at 1.5 percent per year, now appears to be increasing at 2 percent per year, and seems likely soon to reach a rate of 2.5 percent—or perhaps even 3 percent if development continues to reduce death rates while birth rates remain at present levels. Even if population were to increase no faster than 1.5 percent a year, to provide Indians with a diet as varied and complex as that of Americans will require yields six times ours in 2000, twelve times ours in 2050, and 24 times ours in 2100. An increase at a 3 percent rate would require that these levels be achieved in half as much time. Thus, whether India is ultimately to have a vast mass of humanity living at, or close to, the subsistence level or is to achieve some approximation of Western standards, will depend in large measure on the extent of Indian population growth over the next few decades.

Second, and much more immediate, it is unclear that significant increases in living levels in underdeveloped areas such as India can be achieved unless population growth is restricted—and particularly unclear that increases in such areas can be achieved within the framework of freedom and free enterprise. Specifically, since the Civil War total real income in the United States has increased at an annual average rate of around 3.5 percent; to achieve a continuing increase at such a rate in India, within a democratic framework and with appreciable reliance on free enterprise, would be a considerable achievement (though a Communist dictatorship such as prevails in China, by exploiting the present generation, may conceivably manage to develop more rapidly). Let us make the relatively conservative assumption that production and population growth in a country such as India can be taken as independent.[5] To the extent that this is correct, it follows that the rise in living levels depends directly on the extent to which production increases more rapidly than population. Suppose, starting with an average income per person of $60, which is roughly the present Indian level, that a 3.5 percent rate of increase in production can be maintained. Then in fifty years average income will rise to $335 if there is no increase in population whatsoever over the period. But, if population increases at 1.5 percent, income will rise to only $162; if population growth rises to 3 percent—a rate which has been reached or exceeded in many underdeveloped countries—income will rise to no more than $77!

To summarize, population growth can probably continue in the United States for a considerable period without having repercussions on living levels measured in terms of real income (though it may well alter appreciably the character and quality of our lives). But the rate of population growth even in the near future in a country such as India is likely to have a major impact both on the immediate behavior of living levels and on the living levels that are ultimately achieved.

[5] This may well be unduly favorable, as there is evidence that rapid population growth is likely to slow down the increase in real income.

# 8

# The Importance of Economic Development

## Decisions and Economic Development

Under free enterprise, the economizing process requires few conscious decisions; in fact, the absence of need for continual conscious decisions is one of the most appealing aspects of free enterprise. In my judgment this is not true in regard to economic development. The economic situation—or, to use a currently fashionable word, posture—of the United States in 2000 is going to depend far less on our economic institutions, or even on the extent to which we understand the principles by which they operate, than on the *economic decisions we make over the next forty years.*

In part it is the Communist challenge which requires us to think consciously about the implications of the decisions affecting our rate of economic development. But, more generally and over a range that transcends economics, the human race has now achieved—to a quite unprecedented degree—the ability to shape its future. In its least pleasant aspect, we face a world in which all major powers—almost certainly including Communist China—will soon possess the power to make this planet so radioactive as to be uninhabitable. Hence, one future we can shape is no future whatsoever. If anyone feels such an alternative is inconceivable, let him ask himself whether, had Hitler possessed the power to destroy life on Earth on a May morning in 1945, he would or would not have used it. If life is to continue, therefore, it is going to do so only because the human race so orders its affairs that no major dictator—and ultimately no minor dictator either—finds himself in Hitler's position.

Moreover, on a less cosmic level, whether we are to look forward to a world in which everyone has a level of living approximating—or, conceivably, surpassing—the present American level, or a world in which tens of billions, and perhaps ultimately hundreds of billions, live on the verge of starvation is going to be determined to a major extent by decisions made—either consciously or by default—within the lifetimes of those now learning economics. It is the importance, in determining the shape of our future, of the decisions that we are going to have to make over the next few decades which justifies the inclusion of the matters with which this chapter is concerned.

## Affluence and Economic Development

Let us start by examining whether or not rapid economic development is important. Rapid development will not be ours for the asking. Is there any reason why we should try to achieve rapid development in view of the fact that today we are already richer than any nation has ever been and will in any event become richer in the future? Let us consider this question from three points of view: first, the United States by itself; second, the United States in relation to Russia; and, third, the United States in relation to the rest of the world.

John Kenneth Galbraith recently argued, in a book that became a best seller, that we have become so "affluent" that, at least at the margin, production no longer satisfies real wants but only those which are "contrived" or "created."[1] If this is so, why should we seek by rapid development to produce additional goods if the wants such goods are going to satisfy are not real but "contrived"? Let us stress, once again, that increases in production do not guarantee that we will be "happier" or "better off" in any general sense; our desires can always increase faster than our ability to produce. What, however, is meant by "wants being created"? As man is a social animal, his wants are obviously influenced by the society in which he lives; Robinson Crusoe's wants changed the day Friday hove into sight. Determining pristine wants, uninfluenced by social pressures, is equivalent to determining what heredity would have made of a man if he had not been influenced by his environment. If this is the meaning of "created," it is undeniably true; and it is also undeniably true that in a sense "production creates the wants that it satisfies." I would not, for example, today list the services of a fountain of youth among the things I want, but let some clever entrepreneur develop such a fountain—and have its merits attested to by the medical profession—and I will certainly add it to my Christmas list! In fact,

[1] John Kenneth Galbraith, *The Affluent Society* (Boston: Houghton Mifflin Company, 1958).

so long as a product is advertised—or, carrying the matter to its logical conclusion, so long as it is made by a specialized producer who stands to gain from my purchasing it—it is impossible to deny that, perhaps subtly or even subliminally, I may have had my "wants created." Hence the charge is at once both true and, for practical purposes, not very significant.

What we really need to know is how many, of the two thirds of all workers who received incomes below the national average of $5,700 in 1960, felt themselves to be affluent, or felt that the wants they could not satisfy existed only because they had been "contrived" or "synthesized" by clever advertising. I rather suspect that affluence is a matter worried about almost exclusively by people whose income today equals or exceeds the income that rapid economic development may possibly provide for the average person in 2000! Moreover, there is no reason why the increasing capacity to produce provided by economic development need be used entirely to increase production; it may equally well be used to increase leisure. Since 1875 about one third of our increased productivity has in fact gone into a reduction of hours. Perhaps the present balance between goods and leisure is not perfect, but the continuing increase in the percentage of women working and of men holding more than one full-time job suggests that the desire for additional goods—"contrived" though it may be—remains strong.

## Affluence and Social Objectives

Many of those who worry about affluence are concerned because they feel that the present emphasis on private production interferes with the attainment of socially desirable objectives. For example, they argue for a major increase in the nondefense activities of government in order to achieve a more desirable balance between the public and private sectors of the economy—and especially for a massive expansion in the area of education and research to eliminate poverty and toil and to allow us as a nation to play our proper role in the expansion of knowledge. But changes of this sort will be promoted by—in fact, probably cannot in practice be achieved without—rapid economic development. Admittedly the changes in question are possible without development; even without development we could devote far more effort to education and research than we now do. And it may be that development will not help; our "contrived" desire for a dishwasher which now makes us unwilling to pay additional taxes may in time be replaced by an equally urgent and equally "contrived" desire for a helicopter. But, even if relative public and private shares remain the same, rapid economic development at the very least means that the absolute amount of production available for public needs will rapidly increase. Hence it may well be that the best argument for a massive expansion of education and research is the contribution it will make to economic development and the best way of achieving a massive expansion is to make sure that economic development is rapid!

Nothing in what has just been said should be construed as arguing for the importance of the production of more cars with chrome-plated fins or more juke boxes decorated with neon lights. We may quite possibly use our increasing ability to produce in a deplorable fashion. But it appears equally true that a vast increase in our ability to produce—which is what is meant by economic development—is essential even for the United States, considered apart from the rest of the world, if we are to achieve the sort of America most of us would like: without poverty, without slums, without burdensome toil, and with both the goods and the leisure to achieve true affluence.

## The United States and the Soviet Union

Income per person in the United States in 1960 was $2,300; in the same year in the Soviet Union it was perhaps $750. Continuance of the past rate of American economic development will, we have seen, bring an increase to around $5,000 in the year 2000. What is likely to be the level in the Soviet Union? Suppose total Soviet production were to increase over the period at a 6 percent rate—which is the rate that Russia appears to have realized in *favorable periods* in the past. Suppose also that population increases at 1.5 percent and income per person at 4.5 percent. Whether or not Russia can maintain so rapid a rate is uncertain; but even if she could, income per person in 2000 would be only about $4,400. But note that over the period, to the extent that our assumptions are correct, the rate of increase in the Soviet Union would have been more than twice as rapid as the rate of increase realized in the United States from 1875 to 1960. As a result, income per worker would have risen from less than 33 to over 85 percent of the American level.

But why must we keep pace with the Soviet Union? It may well be that the primarily military phase of our struggle with Communism will end in the near future, simply because all-out nuclear war will have become unacceptable. But the resulting military stalemate can mean only that the struggle will become primarily economic. During the military phase, the speed of modern war makes weapons in being, rather than productive capacity, decisive; but, as soon as the struggle becomes primarily economic, productive capacity returns to its former importance.

Under the circumstances, to the extent that the Soviet Union continues to develop with unusual rapidity, there appears to be a strong case for America's not lagging too far behind.

Note, once again, that the level of consumption in the United States could be reduced quite drastically without there being any necessary repercussions on our ability to produce. The *increase* in consumption per person since 1930, for example, is about the same as present government purchases of goods and services *and* net capital formation; hence cutting consumption back to the level per person that prevailed in 1930—certainly a perfectly possible level and one which would be higher than the level prevailing in almost any other country in the world at the present time—would come close to allowing us to *double* government purchases of goods and services *and* net capital formation. Again, almost as large an increase would result from reducing the percentage of the national income devoted to consumption to the level presently prevailing in the Soviet Union, where consumption per person is today hardly more than a quarter of our level. But the percentage spent on consumption in the Soviet Union is not determined democratically; it seems practically certain that the decline from 73 percent of the national income in 1928 to 48 percent in 1953 would have been rejected by the Russian people if they had been free to decide the matter.[2] To meet the Russian challenge within the democratic framework, therefore, will not be easy.

In short, we could, if we would, take from our present production the output likely to be needed to win our struggle with Communism. But our *willingness* to do so within our democratic framework is likely to depend heavily on our rate of development, for rapid development would make it possible to devote the resources necessary to the struggle and *at the same time* steadily expand our consumption. On the other hand, if we do not grow rapidly the problem of meeting the Soviet challenge is likely to become increasingly difficult. To illustrate, if the Soviet Union were able to maintain a 6 percent annual rate of increase in total production between 1950 and 1975, then during the twenty-five-year period total consumption could *double*—which means increase roughly at the same rate as consumption is likely to increase in the United States—while all other production increased *sixfold!* In short, provided only that the Soviet Union can maintain a rapid rate of development, it may well be possible for the Communists to allow a significant increase in consumption and *at the same time* achieve a vast increase in the "other production" that can be used both to ensure rapid development itself and to intensify the Soviet Union's effort to bring about the world-wide triumph of Communism.[3]

[2] For details, see Table 37-5.

[3] For details, see Table 37-7.

## Economic Development in World Perspective

What would we want to do with all the goods that rapid economic development in the United States might make available if a military stalemate seems likely, and further increases in our own consumption do not appear particularly urgent? To the extent that we are obligated to concern ourselves with world-wide economic development they would be urgently needed. Even if our struggle with Communism were to come to an end—and even more so as long as it continues—we can hardly avoid being concerned with world-wide development. It hardly seems realistic to expect to progress in forty years to an $11,000 average income per worker for a thirty-hour week unless the rest of the world is also making steady, even if less rapid, progress. Arnold Toynbee, the historian, has predicted that, in the perspective of history, the twentieth century will be notable, not for its wars or its atomic bombs, but for "having been the first age since the dawn of civilization . . . in which people dared to think it practicable to make the benefits of civilization available to the whole human race." To do so seems less an opportunity than a necessity if we are to look forward to the steady progress for ourselves and for our children that we tend to take for granted but has as yet been realized in only a small part of the world. However, when one starts to consider what is involved in world-wide economic development, the optimism generated by past achievements—and the worry about affluence—disappears rapidly and completely.

For world-wide economic development almost certainly involves the replacement of fossil fuels and steel, on which our industrial development has thus far primarily depended, with solar or atomic energy and some other metal or metal substitute. To illustrate, suppose we seek to achieve, by the year 2100, world-wide living levels equal to two thirds of the level that prevailed in the United States in 1950, and assume that during the period population increases at 1.5 percent a year, which is less than the rate it is today increasing in both the United States and the world as a whole. Finally, let us assume that there is no use of any resources whatsoever between 1950 and 2100. Given the assumed increase in population (to around 20 billion) and the desired world-wide level of living, quite liberal estimates of the availability of resources suggest that, at the implied level of use in 2100, copper would be exhausted in perhaps a little over a year, iron in a little more than a decade, petroleum in one to ten years, and coal in twenty to two hundred years, depending on the estimate of reserves used.[4] Exhaustion of petroleum has been so frequently predicted in the past that estimates of this sort are often lightly dismissed. But the estimate of petroleum reserves to be used assumes that more than thirty-three times as much petroleum will be extracted in the future as has been thus far produced. Keep in mind that the 7 percent of the world's population residing in the United States is today responsible for about half the world's consumption of raw materials. The fact that the United States today *alone* consumes natural resources on a large scale explains why thus far natural resources have not been particularly important in production or in explaining living levels. But raising the living levels of any important part of the world to any significant fraction of the present American level inevitably involves a vast increase in resource use. Whether or not the particular estimates of availability and use just presented turn out to be correct is not important; what is important is that any massive increase in the use inevitably cannot be maintained for long without repercussions on availabilities.

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[4] For details, see Table 39-2.

The most obvious implication of these comparisons—that worldwide development means that we shall run out of certain major raw materials—is least important, for we will certainly be able to find substitutes for specific shortages. What is important is to recognize that raising world living levels significantly involves not merely industrializing the underdeveloped areas of the world but creating *an entirely new industrial base for the entire world.* This clearly can be done, but it will be a great deal easier if rapid economic development is occurring in the areas of the world that must take the lead in developing this new industrial base.

# Section II | ECONOMIZING

# PART I How Production Objectives Are Determined

## 9 The Sovereign Consumer

### Introduction

The available factors of production—land, labor, and capital—can be used to produce a vast variety of material things that satisfy men's wants. How do we choose among the many possibilities and decide what to produce? The fundamental answer is that *under free enterprise income recipients set our production objectives by the way in which they spend their income.* This chapter attempts to make clear the implications of this statement.

As we have seen, setting production objectives in this way is called "consumer sovereignty." In some discussions of free enterprise the impression is given that the consumer is an absolute sovereign, with the producer in dancing attendance on his every whim. But actually the consumer has never been more than a limited sovereign and his rule is currently being further restricted in a number of ways. There is, first, the area where production objectives are established by government purchases of goods and services. Second, there is the area where the government influences the terms on which goods are made available—through regulation, taxation, and subsidy. Third, business itself through modern advertising tries to call the tune for much consumer spending. Let us consider the significance of each of these limitations on consumer sovereignty.

## The Role of Government Purchases

In a democracy one may argue that government spending represents the collective choice of consumers as expressed at the polls rather than in the market place. But there is no reason to believe that people choose at the polls and in the market place in necessarily the same way; in fact, some of the expansion of government activity has resulted from a preference for decisions made at the polls over those made in the market place. Hence it is clear that a distinction should be made between the production objectives established by the consumer as he exercises his sovereignty in the market place and those established by the citizen as he exercises his sovereignty at the polls.

In this sense consumer sovereignty is being restricted by the expanding role of government. Part of the expansion has been in the influence of government through its rules and regulations—ranging from the Sherman Act against monopoly to restrictions on parking—and a further part through the "transfer" of income from one group to another; these we shall consider in the section that follows. But, in addition, the government has absorbed increasing amounts of the goods and services we produce. One way in which this absorption can be measured is by comparing the value of government purchases of goods and services with the national income. On this basis in 1929 all government (federal, state, and local) purchasing amounted to less than 10 percent of income. After reaching 53 percent during World War II and 27 percent during the Korean crisis, the proportion was slightly lower at 24 percent in 1960. Overwhelmingly the increase has been in the federal share, which rose from 1.5 to almost 13 percent of income over the thirty-year period.

In one sense this method of measuring the absorption of goods and services by government exaggerates the situation. For, while government purchases in 1960 amounted to 24 percent of the national income, less than 14 percent of the national income was taken by taxes levied to pay for such purchases. The remaining purchases, equal in value to 10 percent of the national income, were paid for by indirect business taxes—taxes, such as real-estate taxes, which we saw in Chapter 2 are levied on business before factor incomes are distributed rather than on the factor incomes that make up the national income. Under the circumstances a case can be made for relating government purchases to the net national product (national income plus indirect business taxes). But the actual differences are small: in 1960 government purchases were about 22 percent of the net national product as against 24 percent of the national income. Hence it seems, on balance, best to concentrate on comparisons with the national income, which is the more generally useful concept.

By far the most important factor in explaining the expansion of government purchasing is modern military technology, which has vastly increased the cost of national defense. In 1960 not far from half of total government expenditure—or 11 percent of the national income—went to "national defense" according to one definition of that somewhat ambiguous term. On this basis nondefense spending by government from 1929 to 1960 rose only from perhaps 9 to 13 percent of the national income.

In other words, of the total expansion of government purchases over the period, roughly three quarters has been for a purpose that would have received the complete approval of that great exponent of laissez faire, Adam Smith. For Smith wrote in *The Wealth of Nations* that "defense . . . is of far more importance than opulence . . ."! Undoubtedly Smith would have disliked many of the other things that governments have been doing in recent years. But the proper role of government, which will be discussed systematically in Chapter 24, need not be considered here. What is important at this point is to stress that, for better or worse, production objectives for close to a quarter of current production are determined, not by the way income recipients spend their income in the market place, but by the expenditures of federal, state, and local governments.

### The Role of Government Influence

Does this mean that the consumer has free rein regarding the other three quarters? By no means. The government engages in many activities that influence the availability of the things consumers may wish to buy. At one extreme are a number of things the government may generally prohibit entirely, such as narcotics or switch-blade knives. Again the government prohibits the sale of impure food and harmful drugs; the man who sold tapeworm eggs as a reducing remedy is now out of business. In short, where there is fairly general agreement that a product is definitely harmful, the government is prepared to step in and prevent its production.

Where the government does not feel that complete prohibition is in order, it has the option of restricting consumer choice by imposing taxes on the products involved. In fact, the *logical* case for taxing liquor and luxury products in general as against a necessity such as food is that in these particular instances it is felt that an exception should be made and consumer choice honored *in part only*. For taxation makes the consumer pay a great deal more for the product than would be justified by the actual land, labor, and capital needed to produce it and, therefore, restricts the extent to which consumer choice directs the use of the scarce factors of production. (In practice legislators are not always motivated by logical considerations; many of the excise taxes that are actually levied—such as the gasoline tax—reflect less a desire to restrict consumer choice than an estimate that the tax involved will cause less protest by taxpayers than any available alternative.) When one considers the vast array of government prohibitions, licenses, zoning laws, and related restrictions, together with the impact of taxation, the scope of the government's influence on consumer choice is obvious.

At the opposite extreme are activities which the government wishes to encourage. Sometimes under these circumstances the government simply buys the service and then makes it available without direct compensation, as in the case of schools; at other times sales below cost are utilized, as in the case of postal rates for magazines and newspapers. Again subsidies by the federal government for slum clearance, housing development, and public roads are examples of federal spending designed to encourage particular types of spending by state and local governments. And just as taxes can be used to restrict, so can exemptions be used to encourage—as in the case of children, medical expenses, and charitable contributions. Note that in part these activities belong in the preceding section on government purchasing; but in most cases the expenditures are designed to have a broader influence than can be measured by the number of dollars involved and to that extent belong in this section.

Finally, there are "transfer payments," in which the government takes from Peter to pay Paul. An obvious example is the social security program, in which taxes on present employees and employers are used to pay benefits to those who are unemployed or who have retired. In such cases the action of the government does not reduce consumer sovereignty as such but, to the extent of the transfer, makes Paul the sovereign rather than Peter.

In short, by its spending and in many other ways government influences the determination of production objectives, so that the range over which the consumer is sovereign is both determined by social policy and altered from time to time as it appears to be in the public interest to do so. But after the government has taken its share and provided the framework, income recipients are in a position to establish production objectives by the way in which they spend their income.

### The Special Case of Saving

One of the things that income recipients do with their income is to purchase, by a process of saving and investing, *capital goods* (goods that facilitate further production, such as tools and machinery). Net investment in capital goods in 1960 amounted to only 8 percent of the national income, though gross investment (including investment financed by depreciation allowances) was equal to 18 percent of income in that year. Despite the small relative importance of saving and investment, we shall find this area a vital one from the point of view of both economic development and economic stability. The whole matter, therefore, is one to which considerable attention will be devoted in both Sections III and IV. But because the level of saving is determined under present conditions by a number of other factors besides decisions of income recipients, we shall not consider decisions in regard to saving further at this point, concentrating instead on decisions in regard to consumption.

### Consumer Sovereignty and Income Distribution

Why *should* consumers be sovereign? Why *should* they determine production objectives? Let us temporarily assume that *income is distributed in whatever way seems best*—complete equality if that seems desirable or any appropriate degree of inequality. The confusion that results unless this assumption is made is illustrated by the socialist charge that free enterprise produces champagne for the rich when the babies of the poor lack milk. For some believe that the rich have too much of everything but others (especially prohibitionists) believe that they should not be allowed champagne because it will be bad for their health. Only the second of these is an objection to consumer sovereignty as such; the first is an objection to the prevailing distribution of income.

### The Case for Consumer Sovereignty

The case for consumer sovereignty is on two levels: first, in terms of basic purpose; second, in terms of more immediate goals. On the first level, if our purpose were to achieve the greatest possible military strength, the role of consumer sovereignty might be relatively limited; it may well be that planning has an advantage when it comes to developing a country's war potential. Thus the first type of attack on consumer sovereignty comes from those who reject the basic idea of an economy run primarily for the benefit of those who make it up rather than for conquest or glory or some similar objective. This sort of objection we shall simply rule out, for we are here concerned with societies whose basic purpose is the greatest good for the greatest number of its own citizens.

In such societies there would appear to be a clear presumption that the consumer generally knows best what he wants *provided that he is not ignorant of the alternatives open to him.* If there is no accounting for tastes, then the very complexity of modern consumption emphasizes the importance of preserving for the consumer the main role in setting production objectives. In fact, freedom of consumer choice becomes increasingly meaningful as an economy develops. Where a consumer spends most of his income on food and most of the food he consumes is a single staple, the range over which he can exercise choice is severely limited. But where a consumer has much left over after purchasing "necessities" and considerable leisure time, significant variations become possible. One has only to look at the hobbies people pursue to recognize the variety of things people want. Where consumers know what the alternatives are, the case for consumer sovereignty seems clear. In fact, the discussion can be summarized by a single question: Who is better qualified to decide what the consumer wants than the consumer himself?

So far, so good. But two questions immediately arise. Does not advertising *mislead* the consumer and *severely limit* his sovereignty? And is he not in reality *ignorant* of the alternatives that are open to him? Both questions deserve careful consideration. Let us start by analyzing advertising from the point of view of its overall contribution to the economy.

## Advertising in the American Economy

Today advertising is big business, involving spending amounting to 3 percent of the national income. This is about half as much as we spend on all forms of education—both public and private and from the kindergarten through graduate school. In individual areas of the economy advertising is of far greater importance. Though ranking around twenty-fifth in total sales, Procter and Gamble has in some recent years been our largest advertiser; as much as 25 percent of the value of some products it sells has been spent on advertising—and as little as 13 percent for wages and salaries! Is so large an expenditure justified?

First, a considerable part of advertising expenditures goes to support media that we would want in any case. If it were not for advertising, our magazines and newspapers would cost far more than they do and we would have to find some other way of supporting radio and television. Put the other way round, part of the price we pay for advertised products goes to support things we would certainly want in any event. Hence even if we were to eliminate all advertising, we would save only what is left after media costs have been deducted—plus the reduction in the cost of producing our papers and magazines if they carried no advertising! True the benefits and the burdens are not necessarily distributed with equity; a man who buys breakfast cereals today may have to pay for television programs he never looks at, so that a better distribution of benefits and burdens is certainly possible. But there is little doubt that people would want magazines and television stations even if they had to pay for them in full; hence from the point of view of the economy as a whole the expenditures involved are not wasted.

Second, despite all its extravagances, advertising does manage to convey a substantial amount of useful information. This is true of goods that are to be bought by other producers. It is also true of newspaper advertising or local radio or television programs that concentrate on the specific availability of goods. Given the complexity of the goods being marketed in our economy, there can be no question that providing information regarding them is an important and useful function. Note that advertising is becoming increasingly important in the Soviet Union as expanding production makes an increasing variety of products available. There is no doubt that the information conveyed meets a real need.

### Advertising and Waste

But there remains much advertising that, from the social point of view, is at best wasted and at worst harmful. Advertising is obviously wasted if it accomplishes nothing. If three blondes on three billboards urge you to buy three brands of soda pop, the chances are good that you will buy the brand you have been drinking anyway—though if one of the blondes had not been urging your regular brand you might in time desert it. Or, if you change to another brand because you prefer its blonde, you are likely to be offset by someone else who switches to your brand for the same reason. *Advertising that merely continues to retain for an advertiser his customary share of the market—no matter how essential it may be from the advertiser's point of view—is from the social point of view wasted,* or worse, perhaps, if the blondes are less attractive than the scenery the billboards conceal. But to the extent that the drink quenches your thirst, the spending on the soda pop is not wasted. Hence in this case the waste can in general be measured by the advertising expenditure less any media costs that may be involved.

But there are times when the spending induced by advertising is itself a complete waste. Obviously it is not easy to find examples acceptable to my publisher's lawyer, who thinks books should produce profits and not lawsuits. But, as the Federal Trade Commission has obtained agreement that baker's yeast is not again to be advertised for direct human consumption, it is possible to recall that, just when the retail market for such yeast collapsed as a result of the decline of home baking, advertising discovered that eating it was good for a variety of ailments from adolescent pimples to constipation. There can be no doubt that yeast had the basic requirement of medicine: it had a horrible taste!

An endless string of eminent doctors testified to its virtues—but they mostly lived outside the United States where no one was trying to sell yeast and where a thousand dollars did help with the mortgage. So far as I know, no objective evidence of the virtues of baker's yeast was ever developed, but the product sold handsomely for a while and might well be selling now—doubtless fortified by antibiotics—if handling costs had not eaten up the profits. In this case, to arrive at an overall estimate of the waste involved, we must add to the advertising expenditures the spending that the advertising induced.

Finally, there are the instances—especially in the case of patent medicines—in which the harm goes even beyond the waste estimated in this way because the expenditure on useless products prevents or postpones effective treatment of real difficulties. In this case it is particularly hard to measure costs, human and monetary, for sometimes the ills are imaginary rather than real, and sometimes, whether real or imaginary, are incurable. But certainly this aspect of advertising is the least attractive; nor is it entirely confined to the field of medicine.

Is any estimate of the waste involved possible? It is not easy to estimate even that part of advertising that is wasted in the sense of achieving, on balance, practically nothing. But, of the 3 percent of the national income spent on advertising, it seems doubtful if more than a third is wasted—amounting to perhaps 1 percent of income—when allowance is made for the media supported by advertising and the information actually conveyed.

On the other hand, it seems likely that expenditures on worthless, or practically worthless, products are not insubstantial. The patent medicine industry has had a long—if not particularly glorious—history in the United States, and the "good for what ails you" remedy has in recent years been joined by a host of spark intensifiers, battery additives, and related gadgets. The worthless, or practically worthless, product grades, of course, into what we shall find is the much more important problem of merely inferior products. But it seems proper to consider the former in connection with advertising because such products owe their existence almost entirely to the arts of the pitch man—whether he operates at the county fair or on Madison Avenue. Although obviously no very precise estimate is possible, it seems not unlikely that, on an overall basis, advertising induces as much as 1 percent of the national income to be spent on products that are worthless, or almost worthless. To the extent that these estimates are correct, it follows that wasted advertising and wasted expenditures induced by advertising may run in the order of 2 percent of the national income—not insignificant, but hardly of major importance in the overall performance of the economy.

## Advertising and the Government

We have already noted that, where products are clearly harmful, the government undertakes—not always with complete success—to prevent them from being produced. On the other hand, in the case of products that are useless but harmless, all the government is prepared to do is to ensure that the product does not claim to do more than it does. Selling a product that does nothing without claiming for it more than it does is, of course, the art that earns advertising men large incomes; nor is it too difficult. A producer of "liver" pills used to advertise that his pills "did the work of calomel without the harm of calomel. For they are harmless vegetable pills. They start the flow of the vital digestive juices. When these flow at the rate of five pints a day, then happy days are here again"! Now this statement may well be completely true. The pills probably are harmless vegetable pills and they undoubtedly *start* the flow of the vital digestive juices—as does anything taken into the stomach. On the other hand, the manufacturer made no claims that his pills had anything to do with a daily flow of five pints or, for that matter, with happy days. But the blurb appears to have sold pills and also to have convinced the government that the casual person reading or hearing it was likely to connect the pills with happiness. In any event, the government finally got the producer to agree to cease and desist in the use of this particular pitch. The government next argued that calling the pills "liver" pills was misleading on the ground that they had in fact no therapeutic effect on the liver. To achieve the elimination of that single word required 149 separate hearings involving a transcript of 11,000 pages with 1,000 medical exhibits, cost the taxpayer over $1,000,000, and took sixteen and a half years—and as soon as the Supreme Court affirmed the ruling the company petitioned for a rehearing! Note that all the government is prepared to do in a case such as this is to ban the particular misleading advertisement or label, not the product itself. Only when, as happened with baker's yeast, production has become unprofitable for other reasons is the manufacturer likely to give up trying to find a pitch that promises enough to sell the product without promising enough to arouse the government.

## The Impact of Advertising

Now let us turn to the impact of advertising on the consumer. It may induce him to do any one of four things: work harder, spend more on consumption, spend more on the commodity of a particular industry, or spend more on the product of a particular firm. The first of these possibilities is rarely stressed by defenders of advertising. For even those in advertising seem aware that an economy in which everyone works fifty hours a week for an average income of, say, $7,500 has no inherent superiority over one in which everyone works forty hours for, say, $6,000. The desirability of increased spending on consumption depends on the circumstances. If investment is as a result decreased, economic development may be retarded. Alternatively, total spending may increase if advertising induces people to spend money that would otherwise be idle. But, *in general,* as is made clear in Section IV, an increase in spending is desirable only when the economy has idle factors of production; at other times the increase is likely to do no more than produce inflation.

What of the impact of advertising in transferring spending between industries and firms? People in advertising, especially when talking to those employing them, often argue that without advertising the economy would fall apart, and the critics of advertising often seem to take such pronouncements at their face value as a measure of the impact of advertising. Actually about all that would certainly fall is the income of advertising agencies! Shifting expenditure to Industry A from Industry B *in general* serves no social purpose. The argument that the increased expenditure on Industry A may make mass production possible is no help; the decrease in expenditure may equally make it impossible in Industry B. In fact, the case is not clear even if a given shift in resources permits output in Industry A to increase by 20 percent while decreasing output only 10 percent in Industry B. We can only compare the changes on the basis of their relative value, and it is by no means clear that the 20 percent increase is necessarily more valuable than the 10 percent decrease.

A better case can be made for shifts between firms, because the same commodity is involved. If advertising makes mass production for a few firms possible, total output may increase with a reduction in the total quantity of factors of production that are required; it is quite conceivable that the reduction may more than offset the cost of the advertising. But, although this fits some historical cases, many firms achieve mass production without benefit of advertising, or at least not because of advertising. Moreover, once mass production has been achieved, this defense of advertising ceases to have validity; the automobile industry would hardly revert to a large number of small, high-cost producers even if automobile manufacturers vastly reduced their advertising expenditures.

### Advertising and Consumer Sovereignty

We now come to the basic question: To what extent does the impact of advertising limit consumer sovereignty? Clearly to the extent that advertising provides information about products that yield more satisfaction than those the consumer previously knew about, it will improve consumer choice and increase consumer satisfaction. In a world in which products are continuously changing, it is obvious that providing information regarding such changes fulfills an important social need.

It is, moreover, grossly unfair to blame advertising for all of man's irrationalities, ranging as they do from men's neckties and women's styles to the streamlining of stationary kitchen gadgets. Even Veblen never suggested that conspicuous consumption—consumption for the benefit of the neighbors rather than for itself—started with modern advertising, and one has only to recall the mutilations that primitive women submit to in pursuit of "beauty" to realize how small a concession to vanity cosmetics advertising has induced modern women to make.

The fact is, however, that advertising is widely resented. Undoubtedly some of the resentment is really resentment against the pressures for conformity that are an inevitable part of any society. But much of the resentment stems from the impact of advertising in forcing people to work harder and save less to buy things they really do not want in order to keep up with the Joneses, whom they really do not like! Clearly reductions in leisure or saving resulting from advertising make no general social contribution. Nor does advertising serve any general purpose when it creates social pressures to buy goods with little intrinsic satisfaction simply because styles have changed or the goods have been made into status symbols. Let us stress again that the information provided by advertising often increases consumer satisfaction by increasing the range of consumer choice. The extent to which it decreases satisfaction by distorting choice is by no means easy to determine. In theory the consumer has a strong defense against advertising: he can simply disregard it. But in practice the resentment of advertising would hardly be as strong as it is if this defense were always possible.

Actually the distortion of choice resulting from *effective* advertising is a quite small part of the more general problem of consumer ignorance, which is discussed in detail in Chapter 14. We shall then see that consumer ignorance is, among problems of effective economizing, of major importance. But keep in mind that ineffective or wasted advertising—where the efforts of one advertiser to gain additional customers are effectively offset by the retaliatory responses of other advertisers—distorts choice only to the extent that it raises the price of advertised products relative to those that are not advertised. Apart from the waste involved in ineffective advertising, which has already been discussed, the distortion resulting from the differential impact of advertising on costs of production is hardly of major significance. The important problem is consumer ignorance, to which we shall return in Chapter 14.

# 10

# The Demand for Products and Commodities

## The Definition of Demand

So far we have been viewing the economy largely from the overall point of view and discussing such rather abstract matters as the way in which consumer spending sets production objectives. Now let us shift our sights to what actually happens in the market place, concentrating our attention entirely on the way consumers actually behave—no matter how ignorant they may be or how much their decisions may be influenced by misleading advertising, social pressures, or what you will. For in the market place all that counts is "demand," which can be defined as *desire backed by money.* Thus I have a desire for a Cadillac but no demand for one, as I cannot afford to spend so much for a car. But I do have a demand for other things for which I am willing—for whatever reason—to pay money. Let us examine some of the reasons why consumers have different demands for different products.

## Determinants of Demand

There is, first of all, the matter of *tastes.* This is basic in the sense that it summarizes all the manifold influences that make an individual behave the way he does—all the things that economics cannot account for! Thus, though it is basic, there is not much that can be said about tastes.

Second, there is the *income* of the purchaser. Obviously a rich man may be willing to pay more for a product than a poor man even though his desire for it is relatively small. Statistical studies of consumption patterns demonstrate that the level of income has a strong influence on the way in which consumers distribute their spending. Although spending on most important categories tends to increase with an increase in income, spending on some categories increases *more rapidly* than income—and is called *income-elastic;* on other items the increase is *less rapid*—and is called *income-inelastic.*

Third, there are the prices at which *substitutes and complements* are available. A substitute is, of course, something that may be used in place of the product under consideration whereas a complement is something that is used with it. Thus margarine is a substitute for butter, and both are complements of bread.

Finally, there is the matter of *expectations.* If a change from the present situation to something different is expected regarding any of the foregoing, it will have an immediate effect. Thus, if I expect tastes to change, prices to rise, or my income to fall, the expectation itself may at once influence my willingness to buy a particular product.

Taken together, these are the main factors that determine the quantity of a product that people will wish to buy at various prices. It follows that, if we are to say anything useful about the relationship between price and the quantity that will be demanded, changes in these factors must be ruled out. Obviously if incomes are rising, the quantity purchased may increase despite an increase in the price of the product. In short, if several contradictory influences are in operation, it is impossible to predict what the outcome will be. In what follows, therefore, we shall consider the relationship between price and quantity on the assumption that tastes, incomes, expectations, and the prices and availabilities of substitutes and complements do not change.

### Demand Schedules

Suppose, under these conditions, we ask a given group of consumers how many units of a particular product they would be *willing to buy* in a specific period of time over a wide range of prices. Obviously the results would not be the same for all individuals; some would be willing to buy more units at a given price than others or, put the other way round, would be willing to pay more for a given quantity than others. But if we were to add the results, we would have a demand *schedule* that would show the number of units of a product which could be sold at various prices in that particular market.

For example, in a particular market and during a specific period short enough so that the factors influencing demand did not change, we might find the following relationship between price and the quantity of shirts that would be purchased, which is called a "demand schedule" for shirts:

**TABLE 10-1**

**Demand Schedule for Shirts**

| Price | Quantity |
|---|---|
| $20 | 500 |
| 16 | 650 |
| 12 | 900 |
| 8 | 1,200 |
| 4 | 2,000 |

It is possible to generalize the relationship given in Table 10-1 by plotting each of the five observations on a graph and connecting the points to obtain a "demand curve" for shirts, as is done in Figure 10-1. Note that price is conventionally plotted on the vertical axis and quantity on the horizontal axis.

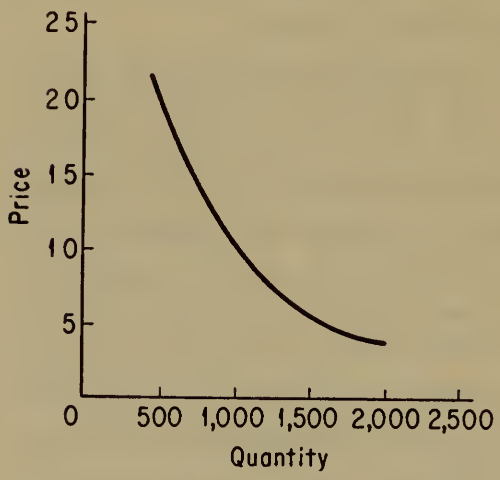

**Fig. 10-1. Demand curve for shirts.**

What, therefore, a demand schedule or curve summarizes is *willingness to buy at various prices.* As a result, a change or *shift* in demand means that there has been a change or shift in the willingness of consumers to buy the product—as a result of changes in taste, incomes, or any other factors affecting demand. Businessmen, on the other hand, frequently use "demand" as if it were the same as sales. But the fact that sales have increased does not necessarily mean that "demand" in the economist's sense has increased; rather it may be that price has fallen as a result of an increase in supply with *no* change in consumers' willingness to buy.

## The Shape of Demand Curves

In almost all cases quantity purchased will increase as price decreases, so that the demand curve looks as we have illustrated it in Figure 10-1. Given the fact of limited incomes, it is almost universally true that the less we have to pay for any product, the more we are willing to buy. Three exceptions are worth noting. There is, first, the situation in which consumers judge quality by price—a special case of consumer ignorance. When the original home-permanent kit was introduced, it flopped miserably when offered at less than $1, but was an overwhelming success when offered at $2. Consumers could not believe that ingredients retailing at less than $1 could do a job in any way comparable to a professional permanent, but felt that this might possibly be true when the same ingredients were offered at $2. Note that, even from the start, consumers would not have bought more at $2 than at $1 if they had known that the ingredients were the same; now that the actual quality of the ingredients has become known, the usual relationship has undoubtedly been re-established, so that price reductions in home-permanent kits can today be expected to expand the quantity purchased in the normal fashion.

Second, there is the case in which the purchaser is in effect buying a price rather than a product. If the situation calls for spending a certain amount of money—as for wedding presents or for gifts to a young lady one is trying to impress—then the effect of a price reduction may be to *reduce* the quantity purchased. This result, however, is most likely to apply to the demand of a particular individual. Only if a product was bought mainly as a wedding present, and only if most individuals had quite similar notions as to how much should be spent on wedding presents, would such a result be likely to apply in the market as a whole.

Finally, there is a case that has little relevance to the Western world but considerable importance for underdeveloped areas. If most of the food of an area is provided by a single product, then a decline in the price of that product may permit consumers to demand other products that they much prefer but cannot normally afford and hence cause a *drop* in purchases of the basic product. Vice versa, there are areas where an increase in the price of bread will lead to an *increase* in the quantity purchased because people will have to spend so much more for bread that they can no longer afford meat. What really happens is that one product is so important that changes in its price bring about significant changes in real income—even if money income (along with the other factors influencing demand) is unchanged. Where this "income effect" more than offsets the normal "substitution effect" resulting from changes in relative prices, a higher price may cause more, and a lower price less, to be purchased. Although this sort of response is certainly possible, it is hard to think of any products of sufficient importance in the living level of a Western country to behave in this fashion. For our purposes, therefore, we can disregard all these exceptions and treat quantity purchased as increasing when price decreases and vice versa.

### The Meaning of Product

Thus far the word "product" has been used but not defined. What does it mean? Definitions are a dull business, but in this case the matter is of major importance and worth careful attention, as the meaning given to "product" is directly related to an understanding of the role of competition and monopoly in our economy.

We have been relating price to the quantity of a "product" that a consumer is willing to purchase. But suppose the consumer does not consider the "product" to be uniform; suppose he distinguishes between different units of the "product" and is willing to pay more for one than for another. Then clearly what we have been saying makes no sense. If the hundredth unit was one that a consumer particularly fancied, he might be willing to pay more for it than he would for the ninety-ninth—and we would have a situation in which an *increased* quantity could be sold at a higher price. Clearly if we are to be correct in arguing that the quantity purchased will increase as price decreases, then "product" must be defined as something with units that the consumer considers to be *interchangeable;* only if they are *perfect substitutes* for one another can they be units of the same "product."

So far so good; we have a definition of "product" that vindicates all we have said thus far. But we have also raised a host of new problems. For I am not indifferent as between Fords and Chevrolets; I have a preference for one over the other. It follows that under our definition a Ford is a separate product from a Chevrolet. But in common speech a monopolist is the only seller of a "product." Are we therefore to say that both Ford and General Motors are monopolists? Nor is this all. There are three drugstores within a block of my house and they are not perfect substitutes in my mind; I find that I am prepared to pay a nickel more for a hamburger in one of them because of the cheery disposition of the soda jerk. Clearly the hamburger *is* unique just because I *am* willing to pay more for it. Must we therefore conclude that the drugstore is a "monopolist" despite his "competitors" across the street?

In an important sense the answer is yes. The store has been able to *differentiate* its product in my mind and make me willing to pay more for it. It has, therefore, developed some power to monopolize—power to charge the consumer more for the product involved. We shall find that *some* power to monopolize is widespread in our economy; the situations in which such power is completely lacking (which are described as "perfect competition") are rare in the economy as a whole and almost completely lacking at the consumer level. But the mere existence of *some* power to monopolize does not make a monopolist in the ordinary sense of the term. The power of my favorite drugstore is severely limited by the existence of the other stores; if the price difference were to rise to a dime, I would be willing to forgo the sunny smile and eat across the street. Obviously situations such as this, where monopoly power is severely limited, are not what most people have in mind when they talk of monopoly. Is there any way we can get away from our rather alarming conclusion that practically everyone is a monopolist to a meaning more in line with the common use of the term?

### The Meaning of Commodity

The fact that one drugstore is a *substitute* for the others is the key to our problem. We shall find that very few things are *perfect* substitutes (which is why *perfect* competition is rare) but many are *close* substitutes. Thus a Ford—and for that matter most other mass-produced cars—is a close substitute for a Chevrolet. But motorcycles, airplanes, and horses and buggies are appreciably poorer substitutes—though they also provide transportation and would generally be considered superior to walking. What we typically have, therefore, are situations in which a group of rather close substitutes is *bounded by a break in the chain of substitutes*. The sharpness of the break varies greatly. Motorcycles involve perhaps an average break from cars; they are certainly less sharp than the break between rubber tires and steel wheels and considerably sharper than that between books and magazines.

We are now in a position to offer certain definitions to clarify these issues. First, let us continue to use the definition of "product" already suggested: things that the consumer considers to be interchangeable. This means that most producers will "monopolize" the production of *their* product. But if there are available a number of products that are close substitutes for each other, then we have an "industry" consisting of all those producing the close substitutes. The industry in turn produces a "commodity" that is set off from other commodities by an appreciable break in the chain of substitutes. Concretely this means that a Ford is a product produced by the Ford Motor Company but cars are a commodity produced by the automobile industry, which consists of all producers of cars. Finally, let us define "monopolist" as the single seller of a commodity, which gives us a definition in line with the common meaning of the term; most people would agree that Ford or Goodyear are not monopolists but that, if there were only *one* seller of cars or of tires, he would be a monopolist.

## Elasticity of Demand

The definitions just offered will help us to understand some of the influences that determine the shape of demand curves. Let us start with the general relationship between price and quantity. How much is the quantity purchased likely to increase as price decreases? There are three possibilities: it may increase relatively more than, as much as, or less than the decrease in price. If quantity increases relatively more than price decreases, total spending (which is, of course, equal to price times quantity) will increase when price decreases and will decrease when price increases. In other words, this is a situation in which the quantity purchased is *sensitive* to changes in price, in which case the demand is said to be *elastic.* On the other hand, if quantity increases relatively less than price decreases, total spending will decrease when price decreases (and will increase when price increases). In this situation, the quantity purchased is *insensitive* to changes in price and the demand is said to be *inelastic.* In between is the case in which purchases increase relatively only as much as price decreases, so that total spending is unaffected by price changes, in which case demand is said to have *unitary elasticity.* To sum up, when total spending moves in the opposite direction to price—increasing when price decreases and vice versa—then demand is sensitive to price changes or *elastic;* when total spending moves in the same direction as price—decreasing when price decreases and vice versa—then demand is insensitive to price changes or *inelastic;* and when total spending is unaffected by price changes, demand has *unitary elasticity.*

These relationships between price and quantity can be presented graphically. But a word of warning is in order. We can measure elasticity precisely by comparing the percentage change in price with the percentage change in quantity. If the percentage change is small (theoretically, infinitely small), we have a measure of elasticity at the *point* from which the change is measured. If the change is appreciable (of finite size), we have a measure of the average elasticity over the *arc,* or section of the curve, to which the measurement applies. Moreover, however measured, elasticity is likely to alter continuously along the entire length of a demand curve; there is, in fact, no reason why a given curve cannot be elastic over a part of its length, inelastic over another part, and have unitary elasticity in between. Hence the situations in the diagrams that follow refer only to the *arc or range over which the curves are drawn.* Had the curves been extended, they might well have changed their character, and even over the range illustrated point elasticity will have changed. Hence the diagrams of Figure 10-2 give no more than a broad indication of the three types of demand. In the case of elastic demand what happens is that at a price of $7 only a single unit can be sold, but if price is reduced to $5, then six units can be sold—a situation in which purchases are highly sensitive to price change. On the other hand, in the inelastic case a decrease in price from $8 to $4 has the effect of increasing sales from four to only six units, indicating little sensitivity to price change. The intermediate case of unitary elasticity is that in which the decline in price is exactly proportional to the increase in the quantity sold, leaving the amount spent unchanged.

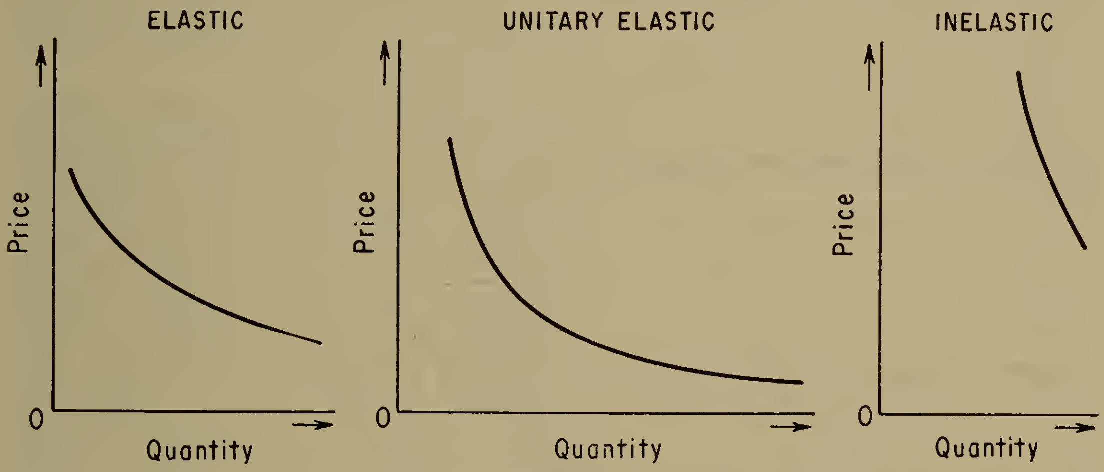

Fig. 10-2. Elasticity of demand.

### Perfectly Elastic Demand

This terminology provides a shorthand device to describe different responses to price changes. But why are responses different? What are the influences that determine the shape of demand curves? In answering this question, it is important to keep in mind the distinction between the demand for the product of a firm and the demand for the commodity of an industry. Let us start with the demand for a product. We have noted that consumers do not generally consider the output of one firm completely interchangeable with the output of other firms. But suppose we first consider the limiting case in which consumers feel that the products of several producers are *perfectly interchangeable*—are *perfect substitutes* for each other. In this limiting case all such producers will be producing a single product, the demand for which will be *perfectly elastic*, which appears on a diagram as a horizontal straight line.[1] This follows because, if an attempt were made by one producer to raise the price of his product even slightly above the prices of products which are perfect substitutes, he would make no sales because everyone would instead buy the substitutes. Conversely, any reduction of price below the prevailing level would swamp the producer with orders. Suppose, for reasons to be discussed later, that the output each producer can offer for sale is limited. Then, *over the limited range with which we are concerned,* each producer can sell *all the units of the product that he wishes to sell at the prevailing price.* No producer can sell any output at a higher price, and none has any reason for selling at a lower price. Hence the demand "curve" for the producer in such circumstances is a horizontal straight line drawn at the level of the prevailing price, as shown in Figure 10-3.

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[1] If such a perfectly interchangeable product is bounded by a break in the chain of substitutes, we have a case in which "product" and "commodity" are identical.

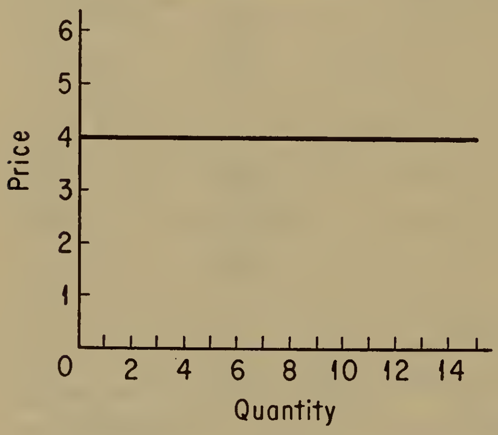

Fig. 10-3. Perfectly elastic demand.

Because this is a limiting case, it is not easy to find realistic examples. Perhaps the stock market offers the clearest illustration of what is involved. Suppose that I decide to sell 100 shares of General Motors. I know that there is nothing unusual or differentiated about my 100 shares; no buyer is going to pay more for them than for any other 100 shares. I also know that on an average day perhaps 25,000 shares of General Motors are sold. Obviously, if I try to demand more than the prevailing price, no one will buy from me but will instead purchase some of the 25,000 other shares sold. On the other hand, I can sell all my shares at the prevailing price, because an additional 100 is not going to make any appreciable difference. Thus the demand for my 100 shares is perfectly elastic in that I can sell all of them at the prevailing price but cannot sell any of them at more than the prevailing price. Note that this applies because I want to sell only 100 shares; if I tried to sell even 1,000 shares, the situation might well be different.

### Elasticity and the Availability of Substitutes

Where a product is not a perfect but merely a close substitute, then its demand is no longer perfectly but merely highly elastic over the relevant range, as illustrated in the first case of Figure 10-2. *Just how elastic depends on the closeness of available substitutes.* To the extent that a producer succeeds in differentiating his product—which in essence means reducing the closeness of substitutes—the demand for it will become less elastic and may conceivably even become inelastic for a while, as illustrated in the last diagram of Figure 10-2. A case in point is Bayer aspirin. Though all aspirin must by law contain the same ingredients, Bayer has succeeded in differentiating its product enough to be able to charge a significantly higher price. But in general the demand for the product of a firm is likely to be relatively elastic because of the closeness of available substitutes.

On the other hand, the demand for the commodity of an industry will typically be less elastic, for by definition a commodity is set off by a break in the chain of substitutes, so that the substitutes for it must be relatively remote. In practice, much depends on the exact meaning given to the phrase "break in the chain of substitutes." Is there a "break" between breakfast cereals and other food or only between food and other goods? Nor is there any reason for the response to a price increase to have the same elasticity as the response to a price decrease. In general, it is the extent to which a particular commodity can be dispensed with (or have other commodities substituted for it) that determines the response to a price increase, and the extent to which the particular commodity can be used in larger amounts (or substituted for other commodities) that determines the response to a price decrease. There is no reason why these responses should necessarily be parallel. Thus salt for household use is a classic example of a commodity with an inelastic demand in both directions, for there is nothing that can be substituted for salt as price rises and nothing that salt can be substituted for as price falls—at least until we come to such a completely different use as melting ice. On the other hand, demand for clothing may be inelastic to price increases if the alternative is to be cold or immodest, but quite elastic to price decreases if a greater variety of clothing is purchased or elaborate clothing is substituted for other types of adornment.

It is tempting to argue that "necessities" have demands that are inelastic and "luxuries" demands that are elastic. But cigarettes, which are hardly necessary to sustain life, have a notoriously inelastic demand. One way of meeting this situation is to classify cigarettes as a "conventional necessity." But it makes just as much sense to turn the matter round and say that a commodity which for any reason has an inelastic demand is a necessity. There is, in short, no easy way of summarizing all that goes into determining the quantity of a particular commodity that will be demanded as price changes, but possible differences are immense. Thus a box of matches might find a few buyers at $5 a box, thousands at $1 a box, and millions at a penny a box. But large changes in the price of table salt would probably have quite small repercussions on the quantity sold. As a result the character of any industry is likely to be greatly influenced by the elasticity of the demand for the commodity it produces.

## Monopoly and Elasticity

We have defined a monopolist as the single seller of a commodity. The fact that the industry is monopolized does not change in any way the demand for the commodity it produces, which depends on all the influences we have just been considering. Thus a monopolist's demand need not be inelastic and certainly will not be perfectly inelastic—a situation not illustrated here because it does not exist in the real world but which would be represented by a vertical straight line. Yearly, for example, the government grants thousands of rights to monopolize in the form of patents, but most of them turn out to be worthless because superior, or cheaper, substitutes are available.

Again, a company called Climax Molybdenum controls most of the production of molybdenum, a metal used in alloying steel. But its power to monopolize is severely limited because quite physically different metals can be used as alloying elements in place of molybdenum. In fact, despite the physical differences between the alloying elements, they are close enough substitutes to suggest that the "industry" should be defined to include all producers of alloying elements, rather than all producers of molybdenum. On the other hand, we noted the fact that Bayer has developed considerable monopoly power—though clearly not a monopoly—despite the fact that the ingredients of its aspirin must by law be the same as those of other aspirins.

In short, the power to monopolize is never absolute but is always limited by the elasticity of the demand curve for the product or commodity involved, which in turn depends upon the availability and acceptability of substitutes. Although the power to monopolize in the case of a firm producing a product is likely to be severely limited by the closeness of substitutes, even a monopolist producing a commodity and protected by a break in the chain of substitutes is in competition with substitutes on the other side of the break, so that his power to monopolize depends primarily on the *width of the break in the chain of substitutes.*

## Elasticity and Marginal Revenue

Whenever demand is perfectly elastic (as in Figure 10-3), the price or average revenue (total revenue divided by the number of units sold) is the same as the additional, or *marginal,* revenue (the *change* in total revenue as additional units are sold). For the firm can sell additional units without having to accept a lower price. But whenever demand is not perfectly elastic—as in any one of the cases illustrated in Figure 10-2, then marginal revenue will differ from price or average revenue.

For, where demand is less than perfectly elastic, additional quantities can be sold only if the price is reduced. Hence total receipts do not increase as rapidly as does quantity sold. This is so because from the revenue obtained from selling an additional unit must be deducted the loss in revenue on the units previously sold resulting from the lower price necessary to sell the additional unit. Table 10-2 illustrates what is involved.

TABLE 10-2

Marginal and Average Revenue

| Quantity Sold | Price (Average Revenue) | Revenue from Last Unit Sold | Loss of Revenue on Previous Sales | Change in Total Revenue (Marginal Revenue) |
|---|---|---|---|---|
| 10 | 50 | — | — | — |
| 11 | 48 | 48 | 20 | 28 |
| 12 | 46 | 46 | 22 | 24 |
| 13 | 44 | 44 | 24 | 20 |
| 14 | 42 | 42 | 26 | 16 |
| 15 | 40 | 40 | 28 | 12 |

The first two columns of the table provide the information summarized in the usual demand curve—the quantity that can be sold at various prices. To expand sales from 10 to 11 units, it is necessary to reduce the price from $50 to $48. The revenue from the sale of the eleventh unit will, of course, be $48; but the $2 required reduction in price will make the revenue received from the sale of the previous ten units $20 less. Hence the increase in total revenue will only be $28. This result can be verified by computing in each case total revenue (price times quantity sold); it increases throughout by the figure in the last column of the table. This change in total revenue is, of course, the revenue obtained from the last, or *marginal,* unit sold, and hence is called *marginal revenue.*

# PART II How Production Objectives Are Met

## 11 Cost, Supply, and Price

### The Entrepreneur

We have seen that the person who undertakes to combine the factors of production in such a way as to meet the production objectives set by demand is called an *entrepreneur*. Let us repeat once more that the entrepreneur has no such high-flown motive; he is simply interested in making, with the factors he hires, a product that he can sell at the greatest possible profit. But profit is highest when, relative to the demands prevailing in the market, the most product is obtained for the smallest factor cost. Hence, provided that profits can be held to reasonable levels, our system is one which harnesses man's desire for personal gain to the achievement of important social objectives.

Entrepreneurship combines a number of elements. In fact, it is sometimes treated as a separate factor of production, and its importance is such as to provide a strong case for separate treatment. It is closely connected with the provision of *equity* or *risk-taking* capital, for land, labor, and much capital typically want to be paid at once although their product may not be sold for a considerable period. But it also includes the special type of labor required for *decision making* or *management*. All in all, there seems little to be gained from an extended formal treatment of entrepreneurship; instead, let us concentrate on trying to understand what in practice is involved.

### Forms of Business Organization

Suppose we start with a brief look at the legal forms through which the entrepreneur operates. There are three main ways in which business may be organized. Simplest of all is the individual proprietor. He is nothing more than an individual in business for himself, with no distinction between his personal and his business obligations. Somewhat more complicated is the partnership, in which two or more individuals band together to engage in business. Here again there is no distinction between personal and business obligations. This means that if a partnership should become insolvent even as a result of the fraudulent operations of a single partner, *all* the personal assets of *all* the partners can be drawn upon to make good whatever deficiency exists. Obviously no one enters a partnership lightly, since he has *unlimited liability* for its debts. Partnerships and individual proprietorships are frequently lumped together—particularly for statistical purposes—as "proprietors."

To make large enterprises possible, it has been necessary to establish corporations, whose owners have *limited liability.* A corporation is a "legal person"—that is to say, it can legally do many of the things that a person can, such as incur debt or enter into contracts. If such debts are defaulted, the only recourse of creditors is against the assets of the corporation—not against the assets of the owners of the corporation, for the debts were incurred by the corporation and not by its owners. Thus, from the point of view of an owner, his liability is limited to the amount he put into the corporation; that much he can lose but no more. Ownership of a corporation is divided into any appropriate number of "shares." A man who has 100 shares of General Motors, which has more than 280,000,000 shares outstanding, owns somewhat more than a third of a millionth part of the equity of the corporation. Note that a corporation may also issue bonds; however, holders of corporate bonds are not owners but mere creditors.

Most people think of corporations as huge organizations, but you, too, can own a corporation and keep it in your bureau drawer—for considerably less than a car costs these days. Under our general incorporation laws anyone meeting certain relatively simple requirements and paying certain relatively modest fees may set up a corporation. You can make yourself president, your brother vice-president, your sister secretary-treasurer, and your mother and father directors. The point is that a corporation is nothing more than a *legal device;* your corporation will make you rich only if you can find a profitable use for the funds you put into it.

The main advantage of the corporate form of organization is limited liability. The main disadvantage is that, if a particular incorporated business makes, say, $1,000,000, about $500,000 will, at current rates, be taken by corporate income taxes, leaving only $500,000 for the owners; but, if the business had not been incorporated, the entire $1,000,000 would have gone to the owners. In practice the advantage of limited liability offsets the tax disadvantage for most large enterprises.

From the economic point of view the legal form is relatively unimportant. What is important is the *independent entrepreneurial unit* in the sense of the separate unit responsible for decision making and risk taking. Such a unit is called a "firm" or an "enterprise" without regard to its legal form. Thus "firm" as used in economics may refer to anything from a corner grocer operating as an individual proprietor to General Motors.

### Cost in Economics

We now have demands for products as well as entrepreneurs who are going to undertake to combine the factors of production to produce the products. At what cost are they going to be able to produce? In part the answer depends on what we mean by cost; once again we are faced with a problem of definition. For the tax collector, the accountant, the businessman, and the economist all use the term differently. In general, an economist means by cost *all payments necessary to ensure that production will continue.* First, workers must receive a wage that will induce them to remain with the firm. This obviously means that labor must receive a wage at least as high as that which could be earned in the *best alternative opportunity* available. In the same way capital and land must receive sufficient compensation to ensure that they do not take advantage of alternative opportunities. It is this stress on the "best available opportunity" that has caused cost, from the point of view of an economist, to be referred to as "opportunity cost." In actual practice, much of a businessman's costs will be for raw materials, heat, light, and the like; but in the last analysis such costs are in reality payments for land, labor, and capital that have been combined into products elsewhere in the economy; hence ultimately all costs can be resolved into payments for the factors of production.

This is, of course, true only if payment to the entrepreneur is treated as a part of payments for capital or labor. But, whether treated separately or in combination with other factors, the entrepreneur must be paid enough to induce him to continue. Note that, if treated separately, the return to an entrepreneur is usually termed *profit.* Thus in economics *cost includes enough profit to induce the entrepreneur to continue in business.* This level of profit is called "normal profit" and, once again, is as much as the entrepreneur could earn in the *best alternative opportunity* open to him. In sharp contrast, therefore, to the tax collector, the accountant, and the businessman, who never consider profit as a part of cost, the economist *includes in cost sufficient profit to ensure continued production.*

These distinctions may seem remote from the business world but they are not. In the branch of OPA that dealt with laundry prices during the war, a price increase was granted a firm making a small profit and denied a firm with a large loss—despite the fact that it was considered essential to keep all laundries in operation. Investigation revealed that, in the first case, the owner paid no interest, rent, or salary to himself, and the profit was so small that he was seriously thinking of closing down. But the laundry making the loss had the whole family of the owner on the payroll, paid heavy interest on bonds owned by his wife, and high rent on a building owned by his mother—and had no intention whatsoever of shutting down. Thus for the economist what is important is that cost include an amount sufficient to ensure that the business will continue—whether or not the sum involved happens to be called "profit" or by some other name. Conversely, this means that a businessman will be quite willing to remain in business even if he is *just covering* his economic cost, for such cost includes as much as the businessman could earn in the best alternative opportunity available to him.

### Cost in the Short Run

One of the first things that a businessman has to determine after deciding on a product is the scale of production he wishes to undertake. He has, for example, to decide how large a factory he wishes and how much machinery he is going to install. One possibility is to operate on a small scale in a small plant with machinery that is relatively inexpensive to purchase but relatively expensive to operate. On the other hand, if he is going after a mass market, he may want a plant specially designed for his needs with expensive and specialized machinery, which will in turn permit a considerable reduction in operating costs. But, once they are made, basic decisions regarding scale of production cannot be altered quickly even if they prove wrong. During the period when such decisions *cannot be remade,* which is what we mean by the "short run," certain of the firm's costs—predominantly for plant and equipment—will be *fixed* without regard to the firm's actual output, whereas other costs—predominantly for labor to operate the equipment—will *vary* with output.

During the short run, when basic decisions cannot be remade, there is an optimum output at which average cost (cost per unit, including both fixed and variable cost) is at a minimum. Why this is so is obvious for small outputs: average fixed cost will inevitably be high, for the cost of the plant and machinery will be spread over a relatively small output. As output is increased, there is a point beyond which the decline in average fixed cost will be offset by the increase in average variable cost—causing average cost as a whole to rise—so long as plant and equipment are fixed in quantity (as they must be during the short run). For, although additional labor may be able to increase the output of a given plant and equipment, after a while the increase in output will be less than the increase in labor cost, so that average variable cost will start to rise and will ultimately rise sufficiently to offset the decrease in average fixed cost. Hence average cost as a whole in the short run first declines, next reaches a minimum, and then starts to rise, giving the U-shaped cost curve illustrated in Figure 11-1.

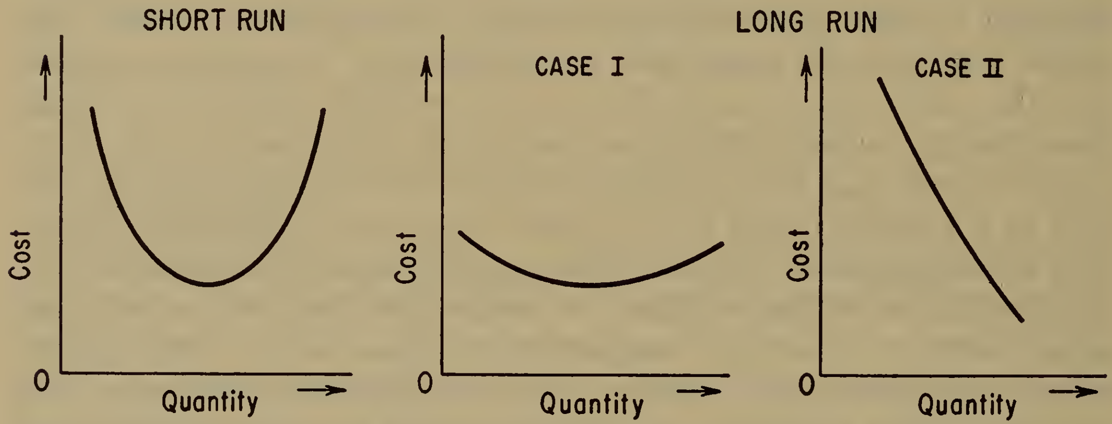

Fig. 11-1. Shapes of average cost curves.

The relationship just set forth is called the "law of diminishing returns" because, given a fixed factor, the returns from the variable factor ultimately *diminish*. Specifically, suppose that a man buys a truck to deliver parcels. If he does not have enough to deliver to keep his truck busy, average cost will be high; but if he has enough to keep one man busy, his cost may well be at a minimum. Thereafter, he can undoubtedly deliver additional parcels if he puts two or three or even four men on the truck, but the decline in the per-parcel cost of the truck (average fixed cost) will sooner or later be more than offset by the increase in the per-parcel cost of the men (average variable cost), so that average cost as a whole will rise.

### Cost in the Long Run

What is likely to be the shape of the cost curve in the long run when basic decisions can be remade? It is worth stressing that the short run does not suddenly end, making it possible all at once to reconsider all decisions: decisions that cannot be remade immediately must be made every day. But basic decisions become increasingly easy *and economical* to remake as time passes. Suppose, for example, that developments have rendered the original decision regarding the size of plant obsolete. If the building involved is rented, the lease will in time come due; even if the building is owned, an alternative use may present itself. In any event a considerable part of the cost will in time have been recovered from the depreciation allowance accountants will have insisted that the firm set aside. In preparation for a change, specialized equipment, such as machinery and fittings that cannot be moved and are not otherwise useful, may be allowed to deteriorate without replacement (even if temporarily heavy maintenance is required). Thus sooner or later a move to a plant better adapted to the firm's needs will become relatively easy.

How much time is required for short to become long? There is no simple answer. An aggressive entrepreneur is likely to move relatively rapidly, despite the cost and difficulties involved, toward more up-to-date arrangements, whereas weak leadership may be able to make only those interim decisions that postpone a fundamental adjustment. Even on the purely physical side, certain types of capacity can be expanded very rapidly, but other types may take years to construct. Further, expansion generally takes less time than contraction, for it typically takes less time to build new capacity than for old capacity to wear out. But overall, as time passes, it is obvious that a firm will be able to adapt itself to a far greater variety of conditions than it possibly can in the short run.

Thus the long-run cost curve is based on costs that are *possible* in the long run. It is therefore likely to be lower than a given short-run curve for outputs either larger or smaller than the optimum output for which the short-run curve is particularly adapted. But it will not be lower for the optimum short-run output unless there have been changes in technology. In other words, the curve of *possible* costs in the long run is likely to be a much flatter U than that of the short-run curve. Note the emphasis on "possible." At most points of time in the long run the entrepreneur will have made decisions that cannot be immediately remade and so will be faced by particular short-run costs. Thus the long-run curve in essence gives the costs that are *in time* capable of being realized. Hence they are "possible" or "planning" costs in contrast to the "actual" or "realized" costs of the short-run curve.

### The Shape of the Long-Run Cost Curve

What sort of shape is the long-run cost curve likely to have? It is clearly likely to fall for a while because of the benefits of mass production—which economists call "economies of scale." What is debatable is whether or not the curve ultimately rises, for the explanation we gave for the short run—that decisions regarding the quantity of plant and equipment could not be remade—no longer applies. Even if there are limits on the size of individual units (such as legal limits on the size of trucks), there is no limit on the number of units that can be added, so that there do not, in general, seem to be physical reasons for the curve to rise. To the extent that it does rise, therefore, it would appear to do so mainly because the single decision-making unit we call the firm cannot efficiently handle the increase in operations.

To take a specific example, the size of farms, although gradually increasing, remains small; the few corporations that have entered the field produce a minute portion of any of the staple crops. Why do we not have large-scale operations in agriculture? The answer is that the physical "economies of scale" are small and are rapidly offset by the "diseconomies" of management. What this means is that, if a farmer employed many men, he would have to spend so much time seeing that his employees did their jobs properly that he would have little or no time to do any farming himself. But the jobs involved are jobs that the men are, by and large, quite capable of doing without supervision if—but only if—they had the incentive to work effectively that they would have as independent farmers. This means that one large firm with many employees will be less efficient than a number of small firms with few (or perhaps no) employees. Hence in the example of farming, the long-run cost curve clearly rises, as illustrated by Case I in Figure 11-1.

Until lately a strong argument could be made for the contention that the long-run cost curve ultimately turned upward in most of industry in the same way that it does in agriculture—but at a quite different point. In recent decades there has been little change in the general level of concentration of American industry; the largest companies have not made out, by and large, appreciably better than their smaller—and frequently nimbler—competitors. In the main this appears to have resulted from a general tendency for large firms to overcentralize management decisions, so that subordinates were snarled in red tape and had little freedom of action. Anyone who has had contact with the Army, our largest organization, knows the extent to which it operates "by the book" and "through channels"—and the results that follow. Probably it is still true for most industry that management difficulties, by bringing about a rise in costs, set a limit on the size of operations that can be profitably undertaken.

But there has been a trend, which started with General Motors and is now being copied widely, toward decentralization and the re-establishment of competition *within corporations,* with the central organization keeping only those functions that can clearly be more economically done centrally and delegating those that cannot. If delegation succeeds in keeping costs from rising, then average cost as a whole will fall so long as there is *any* area of the corporation's operations where economies resulting from increases in the scale of production are still being realized.[1] It is too soon to know how significant this development may become. But at the present time it seems likely that the long-run cost curve of General Motors, the largest corporation in the world in terms of sales, would continue to fall even if output were to increase substantially—as illustrated by Case II in Figure 11-1. Economists have been rather reluctant to recognize the existence of many situations of this sort, because, as we shall see, they rule out the possibility that "perfect competition" will ever be established in such industries. But this is rather a theoretical point; of far more practical importance is the extent to which this development may over time make it difficult to preserve effective—even if not "perfect"—competition.

## The Definition of Supply

If demand is desire backed by money, "supply" can be defined as *willingness to sell backed by availability.* Supply may apply to either a product or a commodity. Though the distinctions are not in every case precise, we shall consider separately *existing* supply, *short-run* supply, and *long-run* supply. Existing supply, as the name implies, is the amount available in a period so short that further production is not possible, whereas short-run supply is the amount available in the short run, and long-run supply the amount available in the long run. Keep in mind that these periods are "operational" periods: the amount of calendar time involved may differ greatly from one commodity to another. The time, for example, required for additional bread to be baked bears little relation to the time required to produce a locomotive—to say nothing of the time required to build a steel mill. Note also that, where additional production is not possible—say, works of a dead artist—existing supply is the entire supply regardless of the time period involved; but most of the things we demand are capable of having their quantity increased by additional production and are therefore affected by all three kinds of supply.

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[1] Note that this conclusion does not in any way depend on the use by the corporation of monopoly power in the markets in which it either buys or sells.

### The Elasticity of Supply Schedules

Just as it is possible to draw up demand schedules giving the quantity that would be bought at various prices, so it is possible to draw up *supply schedules* giving the quantity that would be offered for sale at various prices. Moreover, the formal analysis of elasticity also applies. Supply is *elastic* when the quantity offered for sale is relatively *sensitive* to price changes; in this case the quantity offered increases more rapidly than the increase in price and decreases more rapidly than the decrease in price. Again, supply is *inelastic* when the quantity offered for sale is relatively *insensitive* to price changes; in this case the quantity offered increases less rapidly than the increase in price and decreases less rapidly than the decrease in price. And, finally, there is the case of *unitary elasticity* where the quantity offered increases at exactly the same rate as the increase in price. Figure 11-2 presents four different supply curves; keep in mind that, as with demand, elasticity applies only over the portion of the curve illustrated.

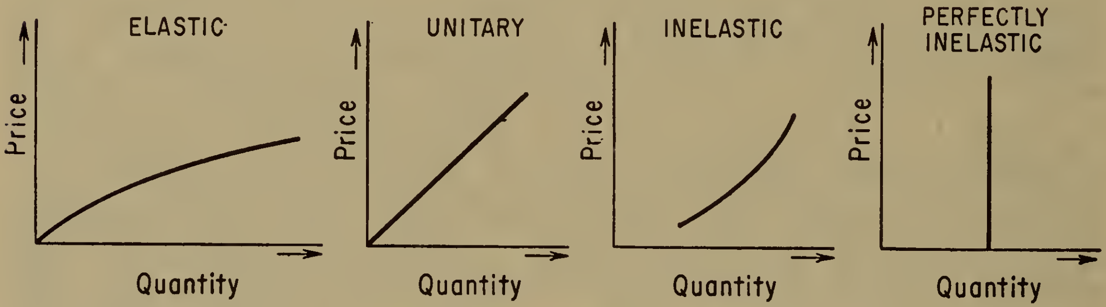

Fig. 11-2. Elasticity of supply.

### Existing Supply

The first three curves in Figure 11-2 are parallel in definition to those illustrated for demand in Figure 10-2, but the representation of unitary elasticity is quite different. In the case of demand, unitary elasticity involves constant expenditure on the product and therefore appears in the figure as a curve—technically a rectangular hyperbola—so drawn that any rectangle which can be inscribed under it has a constant area But in the case of supply, unitary elasticity involves a constant proportional increase in both price and quantity offered for sale and therefore appears in the figure as a line rising from the point of origin at a 45-degree angle.

Recall that we did not illustrate perfectly inelastic demand because we found that it did not exist in the real world. In what sort of situation would there be perfectly inelastic supply? One requirement is simply that the good cannot be produced during the period, which applies by definition when we are dealing with existing supply. But, in addition, it is also necessary that suppliers be willing to sell the entire existing supply no matter *how low the price may fall.* This is the sort of situation that sometimes occurs in the case of perishable products for which storage is lacking, as in the case of a produce market whose storage facilities have been overwhelmed by a bumper crop of fresh vegetables. It may also occur when goods are put up for auction if no limit is set on the prices at which the goods may be bid in.

Does it follow that supply curves for existing supply are likely to be generally quite inelastic? Probably, but not necessarily. For those with supplies may severely restrict the quantities that would be offered as price decreases, and greatly increase the quantities that would be offered as price increases, which will make the quantity offered sensitive to price changes and the supply curve elastic *for a while.* But, after the point has been reached at which the entire existing supply is being offered, the supply curve must become not merely inelastic but perfectly inelastic and rise vertically—because by definition no increase in price can bring about any further increase in supply. Actually quite large increases in prices may well be necessary to induce the entire existing supply to be offered, making supply inelastic over a considerable range. Much depends on the magnitude of the demand with which we are concerned and on expectations regarding the future: to obtain goodwill and future sales a local storekeeper may sell out his entire stock of candles as a hurricane approaches without raising their price, but an itinerant peddler may charge all the traffic will bear.

### Short-Run Supply

In the short run the supply curve depends primarily on short-run cost. Unless the price a firm receives covers its minimum average variable cost (variable cost per unit), no output will be produced. For, if the price received is less than its minimum average variable cost, it would do better to produce nothing at all and in this way avoid incurring any variable cost—which, by definition, it has the option of varying, or even eliminating, within the short run.[2] As price rises above the point at which minimum average variable cost is covered, a firm will expand its output provided it receives sufficient additional revenue to cover *the increase in its variable cost* as additional units of output are produced—which economists call *marginal cost.* If we start with the output at which average variable cost is at a minimum and relate increases in output to their marginal cost, we will obtain a curve showing the quantity of output the firm will produce at various costs in the short run—in brief, a short-run supply curve for the firm.

If the quantities that each firm in an industry will produce at various prices are added together, we shall obtain a short-run supply curve for the industry provided (1) that firms neither enter nor leave the industry during the short run; and (2) that the changes in output are not sufficiently large to have repercussions on the supply price of factors of production available to the industry with which we are concerned. We may take the first proviso as applying in effect by definition in the short run, as there seems no reason to assume that new firms can enter an industry faster than existing firms can expand the size of their plant and equipment, while a decision to go out of business (as opposed to closing down temporarily) is presumably also one which cannot be made in the short run. Hence the first proviso would appear to apply generally in the short run.

The second proviso is more complicated. If a firm is relatively small compared to the industry of which it is a part, it will probably be able to increase or decrease the amount of variable factors—predominantly labor—that it utilizes without repercussions on the supply price of such factors. In other words, the supply curve giving the price at which various quantities of the variable factors would be available to the firm is likely to be highly elastic—perhaps even perfectly elastic in the sense that the firm may obtain all the variable factors it wishes without *any* increase in their price. It is for this reason that the matter was not brought up in connection with the supply curve for the firm. But, if an entire industry expands, it may well have to pay a higher price for the increasing amount of variable factors that it utilizes, for the main way an industry expands its use of variable factors is by bidding them away from other industries which are unlikely to let them go except at higher prices. When factor prices rise in any industry, the effect (assuming competition in the factor markets) is to raise the cost curves of all the firms in the industry. Thus, if an industry is of such size in the economy as to be unable to attract additional variable factors in the short run except at higher prices—meaning that the short-run supply curve of factors available to the industry is rising—then the short-run supply curve for the industry will rise so as to reflect *both* the rise in costs of the individual firms (apart from changes in factor prices) and the rise in factor prices needed to induce additional factors to enter the industry.

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[2] This is strictly correct only if we disregard any cost that may be involved in closing down and subsequently reopening the firm's plant, or in dismissing and then reassembling its labor force.

### The Short Run in Economics

Economics has typically devoted much attention to short-run problems. For example, by relating the marginal revenue that a firm receives as additional units of output are sold to the firm's marginal cost, it is possible to determine the output that the firm will produce as demand for its product fluctuates. For those interested, a summary of short-run analysis is provided in Appendix A at the end of Chapter 12. Both output determination and an elaboration of short-run supply are included. For a student majoring in economics an understanding of short-run analysis is probably essential. But it is considerably less clear that it is necessary for those not majoring in the field; hence it is not included in the body of the text. The problems of competition and monopoly that seem important from the viewpoint of the performance of the economy appear capable of being understood largely without reference to short-run analysis.

### Long-Run Supply

The concept of a long-run supply curve is considerably less clear-cut than that of a short-run curve. Let us start with the firm. The long-run cost of a firm reflects those costs it would be necessary to incur to meet any given level of demand, if there were sufficient time to permit the firm to adjust its affairs so as to obtain the plant and equipment that is ideal in the light of known technology.

One difficulty is that the concept of "known technology" is not particularly precise. For many years before an actual mill was built it was, for example, theoretically possible to develop a continuous strip rolling mill in which a billet of white-hot steel a foot thick could be run through a series of rollers to emerge at the other end with the thickness of a thirty-second of an inch. The practical problem was that, if the initial roller processed the billet at 5 feet a minute (to prevent it from cooling off), steel still connected to the billet would be emerging from the final rollers at over 20 miles an hour! Until the mill was built and the engineering problems worked out in actual practice, was or was not continuous strip rolling a part of our "known technology"?

If we disregard this difficulty, it is conceptually possible to draw up a long-run supply curve for a firm. It is, of course, quite possible that an individual firm will be so important in its industry and in the economy that it will be unable to expand except by paying higher prices for *all* the additional factors that it needs (not merely the additional *variable* factors with which we were concerned in the short run). But let us disregard this possibility in connection with the firm and in effect assume that the long-run factor supply curves to the firm are perfectly elastic. Suppose we start with the case where the long-run cost curve is U-shaped. In contrast to the short-run case, where only variable costs had to be covered, output in the long run will be supplied only if all costs are met. If the firm is to produce at all, therefore, price must be higher than average cost at its minimum point. Starting with the quantity that would be supplied at minimum average cost, we may draw up a long-run supply curve for the firm by relating increasing quantities to the increase in average cost that would have to be covered to induce such quantities to be supplied.

So far, so good. But we have, both in the case just discussed and in the discussion of short-run supply curves, assumed that demand would be large enough to permit firms to produce at or beyond the point at which average or average variable cost is at a minimum. If this is not the case, we are up against the situation, illustrated in Case II of Figure 11-2, in which cost falls continuously over the range with which we are concerned. Even in this situation it is possible to draw up a supply curve for the firm, which, starting at some appropriate point, would fall continuously over the range at issue. But a situation of this sort requires the number of firms to be small, for equilibrium is possible only if demand for the product of the firm falls faster than its cost—which means that demand must be relatively inelastic.

It is also possible to draw up a long-run supply curve for an industry, but in the long run we clearly have to adjust for firms entering and leaving the industry and for changes in the supply price of the factors of production to the industry involved. Suppose we start by disregarding factor supply prices. Then, commencing with the lowest average cost at which any firm would be willing to supply the commodity, we may draw up a supply curve for the industry by adding together, at each price above the minimum, the quantity of output that would be supplied both by firms already in the industry and by new firms induced to enter by the higher price.

Will the supply curve for the industry necessarily be higher when allowance is made for the need to pay higher factor prices to enable the industry to obtain a larger quantity of the productive factors? Generally but not always. It is possible that the expansion of an industry will bring about what are called "external economies"—economies that result from expansions of the scale of an industry rather than from the expansion of the scale of the firms within the industry, which are called "internal economies." For example, as the industry expands, specialized firms may perform functions which no individual firm could profitably undertake—such as to make or repair the machinery used by the industry, process its waste products, or even recruit and train additional workers. To the extent that external economies develop, they in effect reduce the price at which additional factors are supplied to the industry. In short, the long-run supply curve of an industry will depend on the supply curves of all the production factors used by the industry and the possibility of external economies, as well as on the shape of the long-run cost curves of the individual firms and the extent to which firms enter or leave the industry.

One thing that seems clear is that long-run supply will usually be relatively elastic. In the main this merely reflects the fact that the long-run cost curve of the firm is flatter than its short-run cost curve; but it also reflects the impact of the entrance of additional firms into the industry and the possibility of external economies. In general, therefore, especially in the event of a large or unexpected increase in demand, it follows that, the longer the period of time elapsing, the greater the elasticity of the response on the supply side is likely to be.

## Price Determination by Supply and Demand

It is alleged that a parrot once passed a course in economics by answering, whenever questioned, "Supply and demand." Our parrot is quite correct that the price of any good in a free market will be determined by the amount that sellers are prepared to offer in any period relative to the amount that buyers are prepared to purchase in the same period. For what the discussion thus far has done is to set up demand schedules in such a way as to reflect all influences on price from the buyers' side, and to set up supply schedules in such a way as to reflect all influences on price from the sellers' side, so that it is hardly remarkable that price can be said to be determined by the "equilibrium" of supply and demand.

What is meant by "equilibrium" in the sense in which we use it? On a windy day the level of a lake fluctuates a great deal, but there is nonetheless a level to which it would move if no more water were added or subtracted and the wind died down. This is the *equilibrium* level of the lake in the sense of the level to which the lake would settle if there were no further changes in conditions. In the same way we are interested in the equilibrium that a given set of economic conditions would bring about if conditions were to remain unchanged long enough for equilibrium to be achieved. Now if the wind keeps blowing and the inflow and outflow of the lake keep changing, the lake may never reach its equilibrium level; but the concept is a useful one nonetheless. In the same way in a rapidly changing economic world no price may reach—far less settle down at—its equilibrium level, but the level toward which it is moving at any time remains of basic importance.

### Three Cases of Price Determination

Price determination under three basic sets of conditions is illustrated by Figure 11-3. Case I involves a perfectly inelastic supply curve of the sort already discussed in connection with existing supply. With available supply rigidly fixed at *OA* units, whether price is above, below, or at *OC* depends entirely on the level of demand. Case II presents "normal" price determination, with the demand curve sloping downward, and the supply curve sloping upward; it can be applied to all sorts of supply and demand situations and to all sorts of time periods. In this case both supply and demand influence price; deciding which is responsible—as Marshall, the great British economist, put it—is like deciding which blade of a pair of scissors is responsible for cutting a piece of paper. Finally, there is Case III, in which the supply curve is falling over the relevant range but equilibrium is possible because the demand curve is falling even faster. This situation can apply to an industry or to a firm, the demand for whose product is quite inelastic, which in practice means

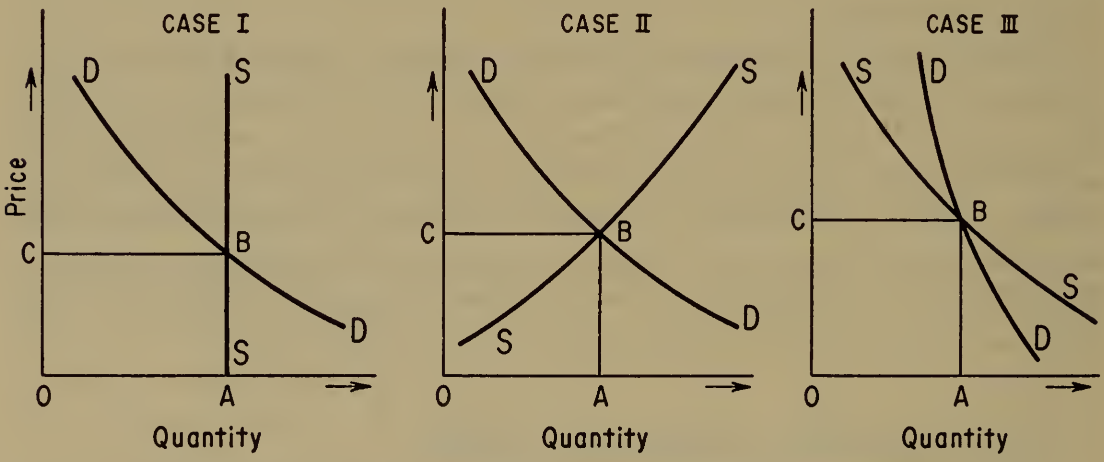

Fig. 11-3. Price determination under various conditions.

that it is likely to apply to a firm only when the number of firms in the industry is quite small.

### Changes in Supply and Demand

Figure 11-4 illustrates what happens when there are *changes* in either supply or demand. In the first case there has been an increase in demand from $D_1D_1$ to $D_2D_2$, causing the quantity sold to increase from $OA_1$ to $OA_2$ and price to rise from $OC_1$ to $OC_2$. Note that, despite the larger quantity sold, there has been in the economist's sense *no change in supply.* A change in supply is illustrated in the second case, where supply has increased from $S_1S_1$ to $S_2S_2$, causing the quantity sold to increase from $OA_1$ to $OA_2$ and price to fall from $OC_1$ to $OC_2$. Note once again that, despite the larger quantity sold, there has been *no change in demand.*

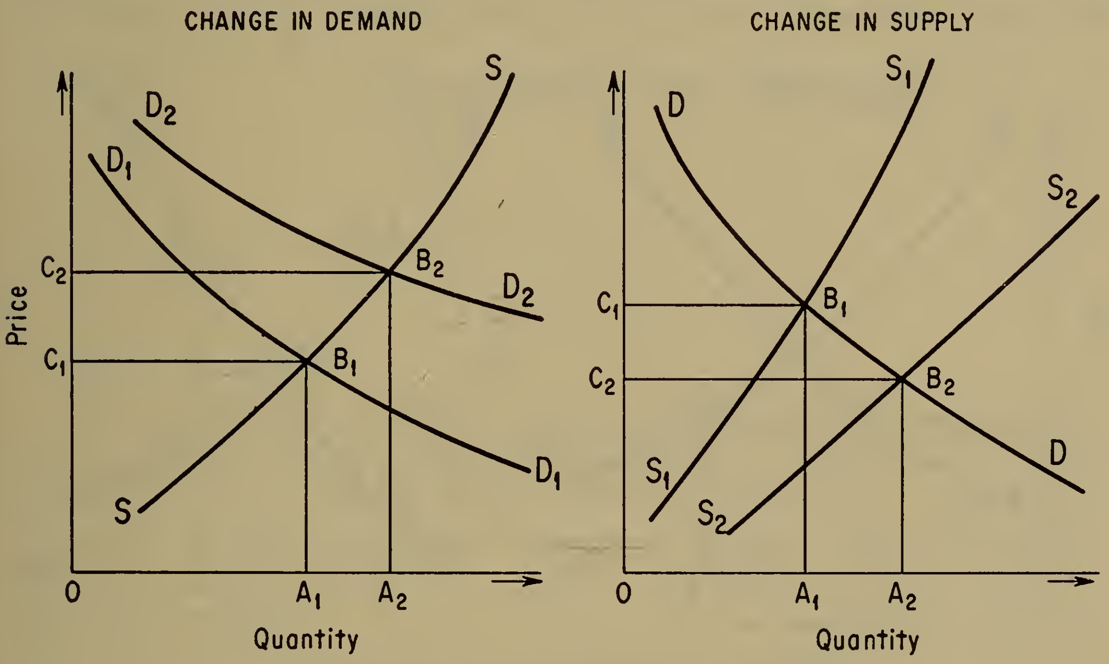

Fig. 11-4. Changes in supply and demand.

### Interferences with a Free Market

Thus far we have been assuming that price is in fact determined by supply and demand in a free market. What happens if the price is set by law above or below the market price? Both possibilities are illustrated in Figure 11-5. In the first case we have assumed that the price is set by law at $OC$, which is below the level that would be established by supply and demand in a free market. Note that only $OA_1$ units will be supplied but buyers would like to purchase $OA_2$ units. In this case some way must be found to discourage purchases of $A_1A_2$ units; this can be done either by formal rationing or by "bare shelf" rationing—letting goods be sold on a first-come, first-served basis, so that those who come late cannot buy any units at all. In the second case the price has again been set at $OC$, which is now above the level that would be established by supply and demand. Only $OA_1$ units are demanded, but sellers would like to supply $OA_2$ units. In this case $A_1A_2$ units have become "surplus" and some way must be found to buy up and dispose of such units.

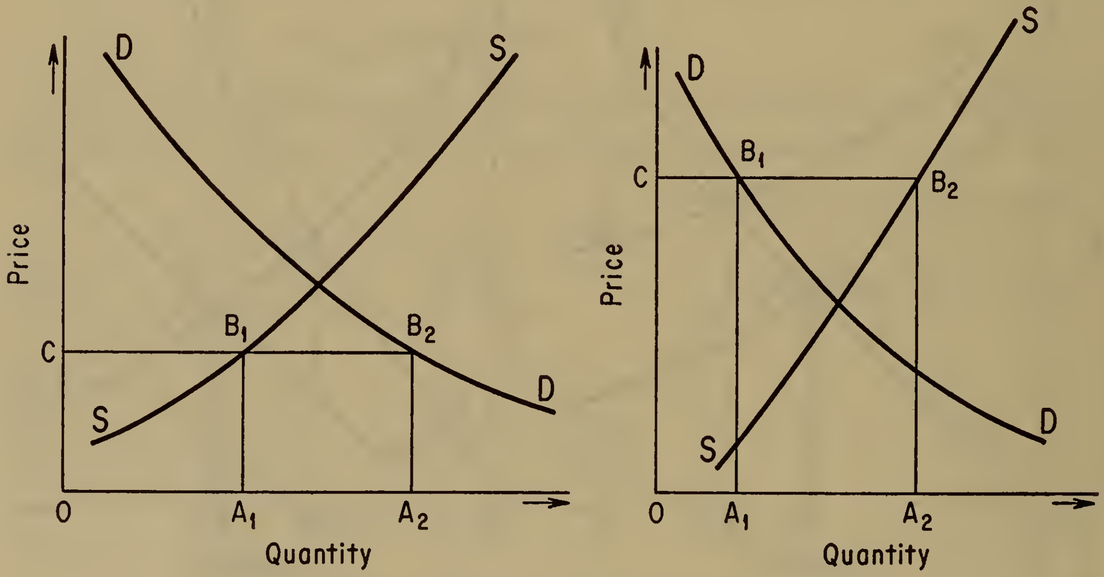

Fig. 11-5. Interferences with a free market.

What would happen in the first case if price control were removed? Two influences would be at work: the higher price would bring about an increase in supply and at the same time it would eliminate a certain number of buyers who would not want the good urgently enough to pay the higher price. In the same way, if price is allowed to fall from a level higher than the free-market level, more people are induced to buy the good at the lower price, while fewer want to sell it. Thus in a free market, price settles at a level that *equalizes the number of units people would like to buy with the number of units people would like to sell.* As a result, supply is never "in excess of" demand nor demand "in excess of" supply in a free market; in such a market there can be neither "surpluses" nor "deficits." When such phrases are used, they must mean either that the free market is being interfered with, or that people have in mind an "excess" relative to some "normal" price that has prevailed in the past or to some price that they would like to see prevail in the future.

# 12 Competition and Monopoly

## Perfect Competition

We have seen that, when a number of firms produce products that the consumer considers to be interchangeable, the demand curve facing each firm will be perfectly elastic and be represented on a chart by a horizontal straight line. Where demand is perfectly elastic and where there are *no limitations on the entry or withdrawal of firms from the industry,* we have an industry in which *perfect competition* prevails. Recall that perfectly elastic demand does not mean that, if all firms in the industry expanded their output, price would be unchanged. It is, in fact, quite possible for the demand for the firm to be perfectly elastic and that for the industry of which the firm is a part to be quite inelastic. How this can be possible was discussed when we considered how 100 shares of General Motors can be sold on the stock market without affecting price.

Does any industry approximate perfect competition? Certain areas of agriculture best illustrate what is involved. Take wheat as an example. Buyers consider wheat grown by different farmers to be interchangeable within specified grades. Roughly a million farmers, each of whom is a firm in our sense, make up the wheat-producing industry and grow around a billion bushels of wheat each year, averaging approximately a thousand bushels a farm. The overall demand for wheat—in other words, the demand for wheat as a commodity—is quite inelastic; it is a basic staple, sales of which are not much enlarged by a price decrease nor restricted by a price increase. Clearly, if all wheat farmers expand production, price will fall; and, if all contract, price will rise.

But how, under such circumstances, can an *individual* farmer sell all he wants to at the going price? The answer, of course, lies in the different quantities that are involved. If the supply curve of the industry changes so that an additional million bushels are offered, the increase will amount to about one tenth of 1 percent of current output; even this small increase may have an important effect on price if the demand curve is unchanged. But the average farmer, even if he doubles his output, will have to sell only an additional thousand bushels. It is the quite different scales involved that make it possible to say that a "small" change in the production of the industry (meaning millions of bushels) may have a significant effect on price at the same time that we say that an individual farmer can sell all he wants (meaning a thousand bushels more or less) without having any effect on price.

The second requirement—that there be no limitations on entry or exit from the industry—certainly applies to the *wheatgrowing* industry. A great many farmers now growing other crops could and would shift rapidly to wheat if conditions warranted; vice versa, many wheat growers could and would shift rapidly to other commodities if it appeared profitable to do so. Hence wheatgrowing certainly approximates perfect competition in regard to freedom of entry—though the situation regarding entry is quite different for *agriculture as a whole,* as we shall see in Chapter 25.

## Equilibrium under Perfect Competition

Let us now examine the sort of equilibrium a firm is likely to reach under conditions of perfect competition. What cost curve shall we use? If the achievement of equilibrium takes considerable time, it may be that the long-run cost curve is more appropriate than the short-run curve. The choice is, however, not important in perfect competition, for the most difficult problem raised by the long run is the possibility that cost will continue to fall indefinitely (Case II of Figure 11-1). But in such circumstances large-scale production is inevitable and the perfectly elastic demand curve of perfect competition is impossible. We can, therefore, in this case concentrate on the U-shaped cost curve without specifying whether it is a short-run or a long-run curve.

The only possible equilibrium under perfect competition is that illustrated in Case III of Figure 12-1. To demonstrate that this is so, suppose that we start with Case I and assume that the supply and demand curves for the industry are such that a price of $5 prevails, resulting in a perfectly elastic demand curve for each firm at the $5 level, as illustrated in Case I. Recall that cost includes normal profit—as much as the entrepreneur can earn in his best alternative opportunity. If the price is $5, then at an output such as *OA* the firm will be earning an abnormal profit.[1] But as long as entry into the industry is unrestricted, at the $5 price entrepreneurs from outside will enter the industry to obtain the higher prevailing earnings. Conversely, if the price is as low as $2 (Case II), entrepreneurs will not be earning normal profit at any possible output and so will have reason to leave the industry for better paying employment elsewhere. But, in the first case, as more firms enter, the supply curve of the industry will shift downward and to the right (see Figure 11-4) and price will fall, whereas, in the second case, as existing firms drop out, the industry curve will shift upward and to the left and price will rise. Under the conditions assumed the only stable situation is that in which the equilibrium between the supply and demand curves for the industry results in a price of $3. At that price the firm is in equilibrium, as illustrated by the right-hand diagram; it produces output *OA* and makes no more—and no less—than normal profit. There is, therefore, no incentive for the number of firms in the industry to expand or contract. Note that in this case production is at the *point of lowest cost.* We shall want to explore further the implications of this result.

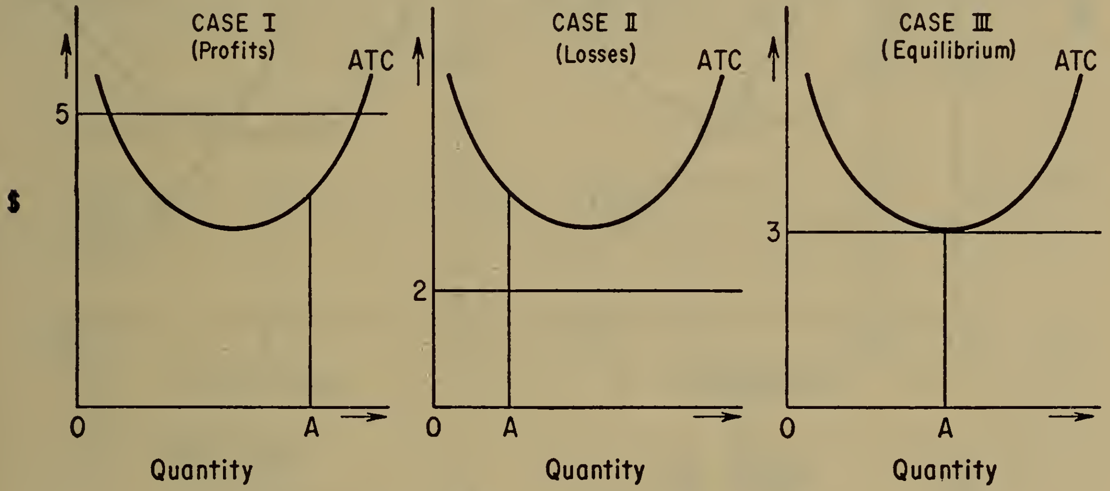

Fig. 12-1. Perfect competition.

### Monopoly

Suppose we now turn to the other extreme—the situation of monopoly, in which there is only one producer in the industry and *no* possibility of entry into the industry. (If a second firm entered we would no longer have a monopoly.) First, demand for the particular commodity (which in this case is also a product) will take the form of the normal down-sloping curve, with the elasticity depending on the width of the break in the chain of substitutes in this particular case. Second, we have

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[1] By using the analysis presented in Appendix A at the end of this chapter the exact output the firm will produce can be determined.

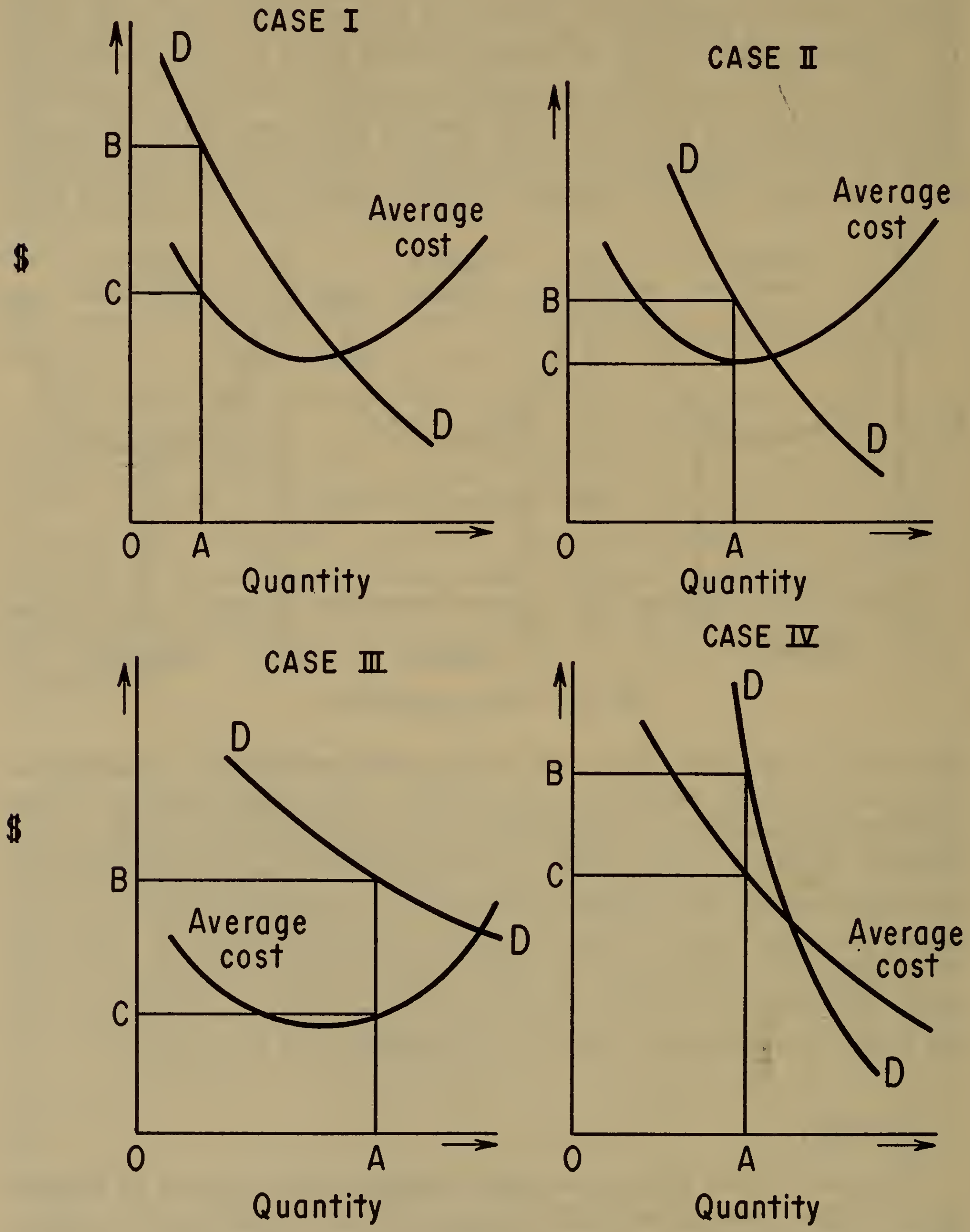

Fig. 12-2. Monopoly.

already pointed out that the shape of the cost curve—whether it is the relatively steep short-run curve or the relatively flat long-run curve—depends on the time period with which we are concerned, but we can no longer rule out the possibility of a continuously falling long-run curve. Possible results are presented in Figure 12-2.

In each of the four cases price *OB* is in excess of cost *OC*, so that the firm has a profit per unit measured by the difference between price and cost, or *BC*.[2] But in the first case output is short of the point at which cost is at a minimum; in the second, it is at the point of minimum cost; in the third, it is beyond the point of minimum cost; and in the fourth, cost declines continuously. A discussion of the significance of these differences will be postponed until Chapter 14. Meanwhile, to complete the presentation of the various possibilities, the intermediate situation of imperfect competition needs to be considered.

## Imperfect Competition

Suppose we combine one feature of competition and one of monopoly and deal with the case where the consumer does not consider the product interchangeable but entry into, and exit from, the industry is free. This situation is called *imperfect competition*. In it the demand curve for the firm will be down-sloping and typically quite elastic, as the degree of differentiation is likely to be small. Profits or losses of the sort illustrated in the first two cases of Figure 12-1 may obviously emerge temporarily. But, for the reasons already presented in connection with perfect competition, the only equilibrium situation that can emerge, *where entry is free,* is one in which the demand curve just touches (is tangent to) the cost curve. This is the only situation in which no more—and no less—than normal profit is being earned, which is, of course, the situation that

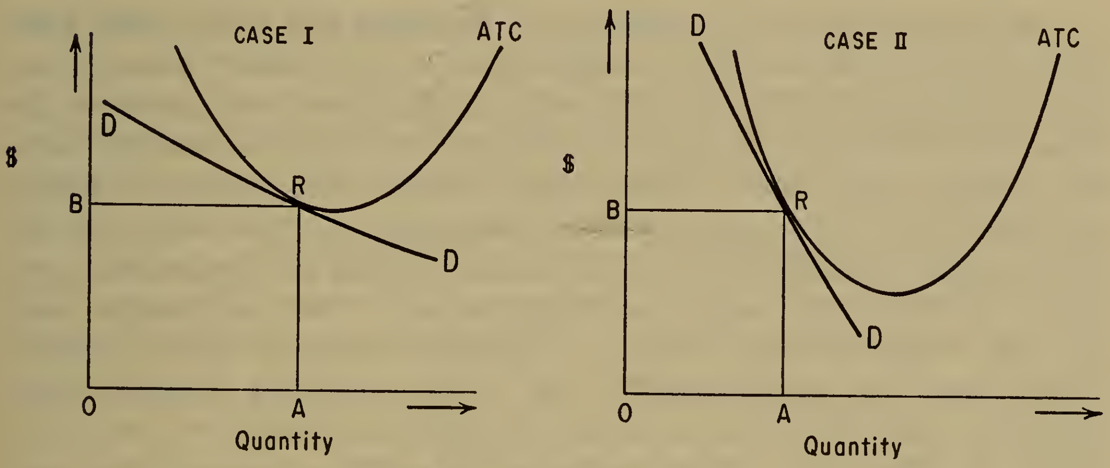

Fig. 12-3. Imperfect competition.

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[2] Once again, by using the analysis contained in Appendix A, the exact output the monopolist will produce can be determined.

must prevail in equilibrium. Figure 12-3 illustrates two possible equilibrium positions when competition is imperfect.

Note that in Case I the demand is relatively elastic; this is the sort of situation likely to prevail generally in imperfect competition. The only place that such a demand curve can just touch any given cost curve is close to the point of minimum cost. On the other hand, in Case II the demand is relatively inelastic; the result is that it touches the cost curve well above the point of minimum cost. Note also that the cases presented include only the familiar U-shaped cost curve, omitting the possibility of continuously falling cost. The reason for this omission is basically the same as in the case of perfect competition—that continuously falling cost involves large-scale production and therefore only a few firms in the industry, which is inconsistent with the requirement that entry into the industry be free.

## Perfect Competition and Economizing

So far the effort to understand the diagrams has in the main been an intellectual exercise. What insight into the performance of our economy can they provide? From the social point of view, cost measures the extent to which scarce factors of production are being absorbed and output indicates the extent to which man's more or less unlimited desires are being met. In the case of perfect competition we have seen that the only possible equilibrium is at the minimum point on the average cost curve—at which point output is being produced *at the least possible cost per unit.* When all firms produce at minimum cost, the largest possible output—and the highest possible real income—is being obtained from any given quantity of scarce means of production with any given technology. In other words, *at the minimum cost point an economy is economizing its scarce factors with the greatest possible efficiency.* This is the reason why economists have been so intrigued with perfect competition.

## Monopoly in the American Economy

But it is obvious that the American economy is not perfectly competitive. Admittedly, apart from industries subject to public regulation, it is not easy to name a monopoly. The characteristic pattern of American industry is not monopoly in the pure sense of a single producer of a commodity but rather *oligopoly* in the sense of a *few* producers of the commodity in question (with individual products which may or may not be differentiated). In fact, so concentrated is American industry that half of all those employed in manufacturing are employed by the largest 1 percent of all firms.

Where oligopoly exists, it is obvious that the character of competition is different from that which prevails under highly competitive conditions. There is likely to be an absence of aggressive price competition, for each producer knows that any decrease in his price will bring "retaliation" from the other producers, which is likely to leave his share of the market unaltered. Increases in quality competition and advertising appropriations are also likely, neither of which can be expected to provoke as rapid—or at least as sure—retaliation as a reduction in prices. The number of devices to reduce price competition is legion, ranging from illegal cartel-like arrangements which fix prices and share markets to "Gary Dinners" (when the leaders of an industry agree on prices at dinner) or "price leadership" (when one firm attains so dominant a position in regard to prices that other firms follow its lead even without going to dinner). And reductions in price competition look as if they would be easy to "get away with." In the long history of the Sherman Antitrust Act (which makes monopolies illegal), only a handful of firms have ever been dissolved; in most cases the Supreme Court has done no more than order minor changes in the procedures of convicted companies.

Actually there are various competitive forces in the economy which do not show up in statistics of concentration. Three companies produce over 90 percent of the linoleum manufactured in the United States. But there are many things besides linoleum with which floors may be covered—or they may be left uncovered—so that competition with alternative coverings severely limits the ability of linoleum producers to exploit their monopoly power. Nor does agreeing to act monopolistically necessarily help; the frequent breakdown of "gentlemen's agreements" indicates that, in business matters, most businessmen are not gentlemen. And the mere *possibility* that other firms (including foreign producers) may enter a field—even if they do not in fact do so—may be highly effective in restricting profit.

### Monopoly Profit versus Excessive Cost

How can we strike a balance between these influences and appraise the absence of perfect competition from the social point of view? When competition is not perfect, two problems may arise: monopoly profit and excessive cost. Monopoly profit is the result of *limitations on entry* into the industry, which prevent excessive profit from being driven down to the competitive level. Note once more that excessive profit is present in all four cases illustrated in Figure 12-2. On the other hand, excessive cost may, but need not, be a part of monopoly; in Case II of Figure 12-2 cost is not excessive, for production is at the point of minimum cost. In the case of imperfect competition, in contrast, excessive cost in the sense of cost above the minimum is present simply because the *product is differentiated*—even if *entry remains free* and there is no excessive profit. In fact, as Case I of Figure 12-3 shows, the *greater the differentiation, the higher above the minimum is cost in equilibrium likely to be.*

Both in economic literature and in the public mind the excessive profit of monopolies has received a great deal of attention. On the other hand, the problems raised by excessive cost have only recently been recognized in economic literature and are little understood generally; yet from the social point of view excessive cost is almost certainly a far more serious matter than monopoly profit. We shall, therefore, devote the remainder of this chapter to monopoly profit in our economy and the following two chapters to the waste resulting from excessive cost.

## Monopoly Profit outside Corporations

There are monopolistic elements present in many areas of our economy, but we are here concerned with *business* monopoly—and the possibility that it causes entrepreneurs to receive a monopoly profit. Businesses are conducted either by corporations or by independent proprietors. In 1960 the latter received 11.5 percent of the national income. Apart from the government's farm program (which receives special attention in Chapter 25), little monopoly exists in agriculture, which has recently accounted for approximately 25 percent of proprietors' income. Nonagricultural proprietors, therefore, currently receive less than 9 percent of income; of this total, perhaps two thirds goes to labor, and only one third to property.[3] Hence the property component of proprietors' income in areas other than agriculture receives rather less than 3 percent of the national income. It follows that the property income of proprietors is so small overall that monopolistic elements in their nonlabor income can hardly be quantitatively important—especially in the light of the competition that generally prevails in areas where proprietors are common. Hence it is in connection with corporate profits that we must look for significant monopoly profits.

## Profits, Dividends, and Net Worth

Corporate "net worth"—total corporate worth less borrowing—is a rough measure of corporate capital contributed by corporate owners. In 1957 net worth amounted to $344 billion, while corporate profits in that year totaled $42 billion. Thus the return on net worth was 12 percent before corporate profits taxes, but only about 6 percent after the payment of such taxes. This is, of course, an average: for General Motors the aftertax return was 17 percent in 1959, causing the stock of the company to sell at more than twice its net worth; but for the Pennsylvania Railroad, the aftertax return that year was 0.5 percent and shares sold as low as one eighth of their net worth.

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[3] For details, see Table 18-1.

### The Importance of Monopoly Profit

In the rapidly changing real world there are many sources of abnormal profit besides monopoly. Sudden increases in demand or decreases in cost—from any source—may cause abnormal profit, which will last until additional firms attracted by the high profit can enter the industry and bring price and profit back to the competitive level. Overall, in my judgment, it seems probable that dynamic factors of this sort are responsible for at least half of all abnormal profit, which would make half such profit quite temporary in character.

How important is the remaining monopoly profit? No precise estimate is possible, but the magnitude can be illustrated. Suppose we assume that one third of the economy is competitive and earns on net worth 8 percent before taxes (4 percent after taxes), that an additional third earns 14 percent before taxes (7 percent after taxes) as a result of receiving abnormal profits for temporary reasons, and that the final third earns 14 percent before taxes (7 percent after taxes) as a result of monopoly power. Differences of this size are rather unlikely, but the excess earnings due to monopoly would in this example amount to *only 17 percent of total profit.*[4]

### The Net Impact of Monopoly

To be conservative let us raise our estimate of the monopoly element in corporate profits to 25 percent of the total. In 1960 corporate profits amounted to 10.6 percent of the national income; approximately 50 percent was paid in corporate profits taxes to the federal government, 20 percent was retained by the corporation, and 30 percent was paid out as dividends. Suppose, starting from such a situation, that the economy suddenly were to become fully competitive. One result would be a decline in federal tax receipts because of the lower yield of the corporate profits tax. But, if spending was unchanged, other taxes would have to be correspondingly increased, so that to this extent the general public would not be any better off.

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[4] This follows because the competitive third would receive 22 percent of total profit and the two other groups, 39 percent each. The excess of the earnings of the monopolistic third (39 percent) over the earnings of the competitive third (22 percent) amounts to 17 percent of all earnings.

On the other hand, dividends represent what may be called the "take-home pay" of corporate owners. Whether or not this is a full measure of their current compensation is discussed at some length in Chapter 18 in connection with possible redistributions of income. The conclusion is that, since saving is socially necessary and would have to be done by someone else if it were not done by corporations, dividends are a fair measure of at least the current compensation of corporate owners. It is, in fact, not easy to demonstrate that corporate saving has benefited corporate owners. The increase in capacity to which corporate saving has contributed appears to have been of major importance in the sharp *reduction* in profit margins that occurred between 1950 and 1960. Suppose corporations treat the monopoly profit we have assumed they receive in the same way as they treat the rest of their income. Then, of the 2.7 percent of national income before tax (25 percent of 10.6) that we are assuming they received as a result of monopoly power, about 1.3 percent would be used to pay additional corporate profits taxes, 0.6 percent would be retained in the business, and *less than 1 percent would be paid out as dividends!* In short, corporate taxation and earnings retention between them have reduced the "take-home pay" of monopolists—even when we estimate their gross pay quite liberally—to so low a level that *no noticeable improvement in general living levels would result if corporate monopoly profit were entirely eliminated.*

## Some Implications of the Unimportance of Monopoly Profit

The implications of this analysis are broad. As already suggested, it justifies the confidence of Adam Smith in free enterprise, for it remains just as true today as it was when Smith wrote that a clear case can be made for free enterprise only when there is effective competition. Thus the smallness of monopoly profit represents nothing less than a vindication of the basic rationale that Smith put forward to justify free enterprise.

The smallness of corporate monopoly profit will probably surprise many students—and some economists. Certainly it is likely to surprise socialists and communists, for most radical literature implies that the masses are slaving for the classes, and many Americans have a similarly exaggerated notion of the size of profits. But the changes that have taken place in the character of our economy in the last hundred years, involving considerably greater concentration of production and a significant reduction in *price competition* (in the sense of the rapid fluctuations in prices that mark such highly competitive markets as those for stocks or wheat) do not appear to have caused a serious maldistribution of the fruits of production.

Once we recognize that we cannot get rich by redistributing the consumption of monopolists, we must look elsewhere for ways of improving the general performance of our economy. The possibility that monopoly may involve excessive cost will be explored in the two chapters that follow as a part of a general discussion of excessive cost. But monopoly may cause other—and far more devastating—damage. It may, for example, slow down technological change. This will be a subject for major investigation in Section III. In short, in this section we have concentrated on profit (and will cover excessive cost) because these are the areas where monopoly affects the economizing process, which is our present subject. But the fact that the "take-home pay" of monopolists has been found to be small does not in any sense mean that the broader impact of monopolistic influences on the economy may not be serious.

Certainly nothing in the analysis implies that the Antitrust Division of the Department of Justice should be disbanded; to the contrary, there is every reason why appropriations for the division should be significantly increased. Not only has our antitrust policy itself been responsible to an important extent for the smallness of monopoly profit; the division also has a vital contribution to make in dealing with the other antisocial aspects of monopoly.

# Appendix A

# OUTPUT AND SUPPLY IN THE SHORT RUN

## The Short Run

The short run is the period of time during which the firm must operate with given plant and equipment and during which the number of firms in the industry is fixed. The basic decision that firms must make in the short run is how much to produce, as they are free to vary their output from zero to the technical maximum capacity of their plant. Let us assume that the entrepreneur's objective is to maximize his short-run profit—defined as the difference between total revenue and total cost—or, if profits cannot be earned at any output, to minimize his short-run loss. We are interested in two things: first, how a firm decides what output to produce; second, how this in turn generates a short-run supply curve for the firm and the industry.

### Short-Run Cost

A firm's short-run cost can be divided into *fixed* cost for plant and equipment, which will have to be met whether or not output is produced and which does not vary with output; and *variable* cost, which can be avoided if the firm does not produce and which varies with output, increasing as output expands. Differences between fixed and variable costs are illustrated in columns 2 and 3 of Table A-1, which summarizes the cost structure of a firm in the short run.

TABLE A-1

Short-Run Cost Schedules

| Units of Output (1) | Total Fixed Cost (TFC) (2) | Total Variable Cost (TVC) (3) | Total Cost (TC) (4) | Marginal Cost (MC) (5) | Average Fixed Cost (AFC) (6) | Average Variable Cost (AVC) (7) | Average Total Cost (ATC) (8) |
|---|---|---|---|---|---|---|---|
| 0 | 120 | 0 | 120 | — | — | 0 | — |
| 1 | 120 | 85 | 205 | 85 | 120.0 | 85.0 | 205.0 |
| 2 | 120 | 160 | 280 | 75 | 60.0 | 80.0 | 140.0 |
| 3 | 120 | 220 | 340 | 60 | 40.0 | 73.3 | 113.3 |
| 4 | 120 | 296 | 416 | 76 | 30.0 | 74.0 | 104.0 |
| 5 | 120 | 400 | 520 | 104 | 24.0 | 80.0 | 104.0 |
| 6 | 120 | 532 | 652 | 132 | 20.0 | 88.7 | 108.7 |
| 7 | 120 | 700 | 820 | 168 | 17.1 | 100.0 | 117.1 |
| 8 | 120 | 960 | 1,080 | 260 | 15.0 | 120.0 | 135.0 |
| 9 | 120 | 1,278 | 1,398 | 318 | 13.3 | 142.0 | 155.3 |
| 10 | 120 | 1,680 | 1,800 | 402 | 12.0 | 168.0 | 180.0 |

Column 3 shows that, although an expansion of output always involves an increase in variable cost, the rate of increase is not constant. This can best be seen from the behavior, summarized in column 5, of *marginal* cost, which is the increase in the firm's variable cost due to the production of an additional unit of output. Note that marginal cost is quite high at low levels of output, declines to a minimum when the firm produces 3 units, and then increases. This behavior of marginal cost results from the law of diminishing returns, which was discussed in Chapter 11 and is explored in greater detail in Appendix B (Chapter 16).

Note that marginal cost can be derived from either variable cost in column 3 or total cost in column 4. The reason is that total cost equals fixed cost plus variable cost. As fixed cost is *constant* at all levels of output, it can have no effect on the *variations* in total cost as output expands or contracts. Hence marginal cost can be defined as either the increase in total cost or the increase in variable cost due to the production of an additional unit of output.

Average total cost, presented in column 8, is derived by dividing the firm's total cost by the number of units produced. In the same way columns 6 and 7, which show average fixed and average variable cost, are derived by dividing total fixed and total variable cost by the number of units produced. Note that average fixed cost declines continuously. This is obviously so because a fixed total is divided by increasing amounts of output. As with marginal cost, diminishing returns cause average variable cost first to drop as output expands and then to rise as additional units of the variable factor are combined with fixed plant and equipment. Since average total cost is derived by adding average fixed cost to average variable cost, average total cost must decline over the range in which average variable cost is declining. After variable cost starts to rise, average total cost may continue to fall if the increase in variable cost is offset by the decline in fixed cost, until the point of minimum average total cost is reached, which is the firm's optimum output. But ultimately average total cost must rise as the increase in average variable cost becomes greater than the decline in average fixed cost.

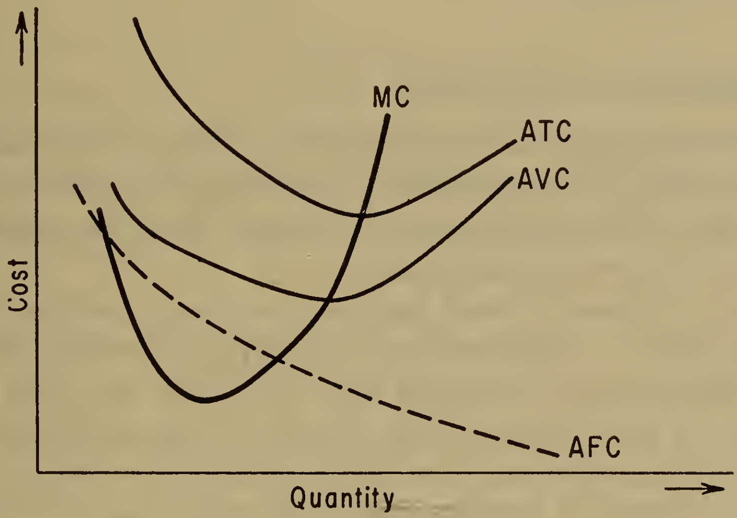

Fig. A-1. Short-run costs.

Figure A-1 presents the behavior of a firm's short-run average total, average variable, average fixed, and marginal costs. Note that the marginal cost curve intersects the average variable and average total cost curves at their respective lowest points. Why this is so can be illustrated by a familiar example. Assume that you have taken four examinations and have achieved an average of 80 percent; assume now that on the fifth examination—the marginal one—you receive 90 percent. What has happened to your average? Without computing it, you know it has increased. But if the grade on the marginal exam had been 70 percent, your average would have declined; and if it had been 80 percent, it would have been unaffected. In other words, if the grade on the marginal exam is even slightly higher than the average, the average must rise; and, if slightly lower, the average must decline. What this means is that a curve showing a series of rising marginal grades intersects a curve showing the average grade at its lowest point. The same principle explains the intersection by the marginal cost curve of each average cost curve at its lowest point.

### Determination of the Best Output

Now let us examine how a firm decides on the "best" output in the sense of the output that maximizes (short-run) profit, or minimizes (short-run) loss. The analysis follows directly from the pursuit of profit maximization (or loss minimization).

Profit is the excess of total revenue over total cost. In determining whether to produce an additional unit of output, therefore, the firm need do no more than ascertain whether the sale of the unit adds more to its revenue than the production of the unit adds to its cost. But the increase in cost due to the production of an additional unit is the firm's marginal cost, and the increase in revenue due to the sale of an additional unit is its marginal revenue. It follows that a firm can always increase its profit by producing and selling any unit of output where marginal revenue is greater than marginal cost. The firm will maximize its profit by expanding output up to the point where marginal revenue is just equal to marginal cost. To illustrate this point in greater detail, let us examine two basic situations. In the first we shall assume that the firm is faced with the perfectly elastic demand schedule characteristic of perfect competition, while in the second we shall assume that the firm is faced with the down-sloping demand characteristic of imperfect competition.

### The Case of Perfectly Elastic Demand

Although situations where a firm is faced with a perfectly elastic demand curve are rare, the case is interesting because in it average revenue and marginal revenue are identical, thereby eliminating some of the complications that arise with a down-sloping demand curve. A situation of this sort is presented in Table A-2; note that in contrast to the situation presented in Table 10-2, in this case marginal revenue is throughout the same as price.

TABLE A-2

Marginal and Average Revenue under Perfect Competition

| Quantity Sold | Total Revenue | Average Revenue (Price) | Marginal Revenue |
|---|---|---|---|
| 1 | 5 | 5 | 5 |
| 2 | 10 | 5 | 5 |
| 3 | 15 | 5 | 5 |
| 4 | 20 | 5 | 5 |
| 5 | 25 | 5 | 5 |

Figure A-2 illustrates a situation in which *PX* represents a perfectly elastic demand curve, so that both average and marginal revenue are *OP*. In this case the firm will produce *OA* units, for that is the point at which marginal cost is equal to marginal revenue. That this is the best output can be seen by considering a firm producing *OE* units and trying to decide whether it would pay to expand output to *OR*. Figure A-2 shows that marginal cost due to the production of the *OR*th unit is *RM* while the marginal revenue from the sale of the *OR*th unit is *RS*. Since *RS* is larger than *RM,* it is clearly in the interest of the firm to expand its output to *OR*, as the production and sale of the *OR*th unit increases the firm's profit by an amount equal to *MS*. But what is true for the *OR*th unit is equally true for any unit of output where marginal revenue exceeds marginal cost, so that the firm can increase its profit by producing up to the point where

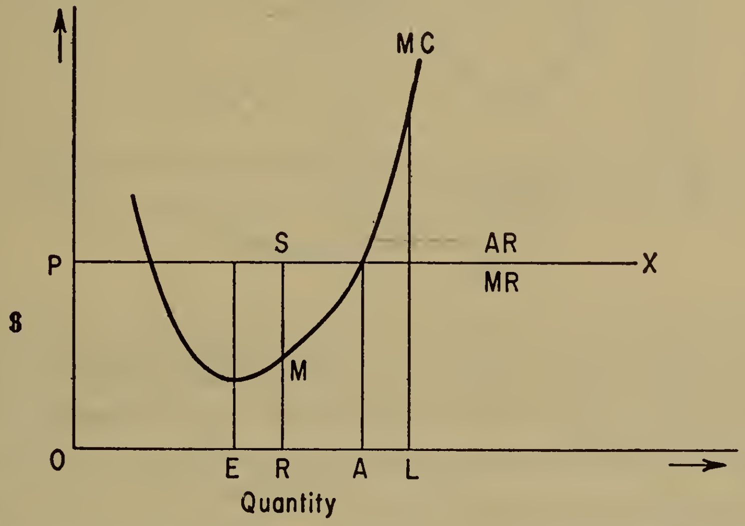

Fig. A-2. Output determination with perfectly elastic demand.

marginal cost is just equal to marginal revenue. Should the firm produce beyond this output (at output *OL* in Figure A-2), the increase in its cost will exceed the increase in its revenue, lowering profit and making a reduction in production desirable.

### Determination of Profitability

Note that the firm's best output has been determined without reference to its average cost or average revenue. Knowledge of these schedules is necessary, however, to determine how profitable the firm's operations are at its best output. Note that, as normal profit (defined in Chapter 11) is included in cost, what we are interested in determining is the firm's *abnormal profit,* which it may of course earn in the short run because additional firms cannot enter the industry. Figure A-3 illustrates a firm's marginal and average total cost curves, together with a perfectly elastic demand curve at the level *OP*. In this case the firm will produce *OA* units, as at this level of output marginal cost is just equal to marginal revenue. When the firm produces *OA* units, average total cost is *AC* and total cost is equal to *AC* times *OA* (or the area of the rectangle *OACT*), while average revenue is *AR* (= *OP*) and total revenue is equal to *AR* times *OA* (or the area of the rectangle *OARP*). The area representing total revenue exceeds the area representing total costs by the rectangle *PTCR*, which represents, therefore, the firm's abnormal or short-run profit.

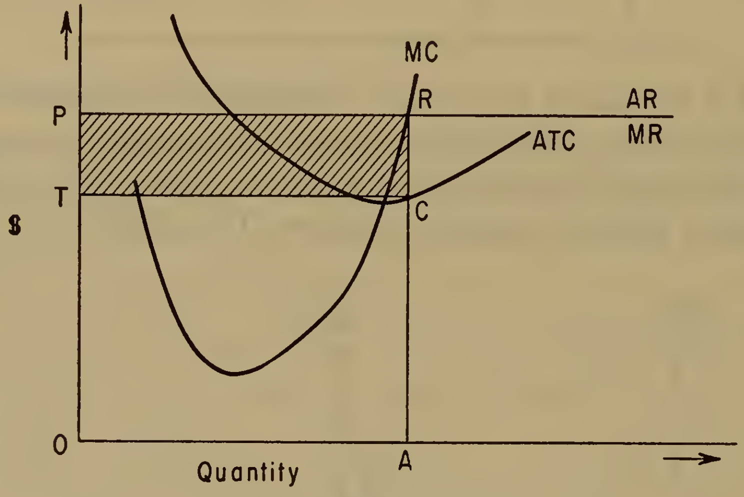

Fig. A-3. Short-run profit.

In the short run the firm may incur losses even though it is producing at its best output. This situation is illustrated in Figure A-4, where the best output is again *OA*. At *OA*, however, cost (rectangle *OACT*) exceeds revenue (rectangle *OARP*) by the area of the rectangle *PTCR*, which represents the firm's short-run loss. But why should a firm produce at all if at its best output it incurs a loss? Let us now elaborate the answer given in Chapter 11. If the firm chooses to produce, it does so because the loss it incurs when it produces is less than the loss it would incur if it did not produce. When a firm does not produce, its loss equals its total fixed cost (which must, of course, be met in the short run whether or not production occurs). If the firm elects to produce, its cost will equal its total fixed cost *plus* its total variable cost. Hence a firm will produce in the short run so long as, at its best output, total revenue exceeds total *variable* cost. For an excess means that total revenue is sufficient to cover not only variable cost but a *part* of fixed cost as well. In this case its loss will equal *that part* of fixed cost *not covered by total revenue.* This is obviously a smaller loss than would occur if it had elected not to produce at all, when its loss would have been equal to its *entire* fixed cost. In short, the firm will elect to produce in the short run if average revenue is at least equal to its average variable cost at its best output, but will choose not to produce if average revenue is below average variable cost at its best output.

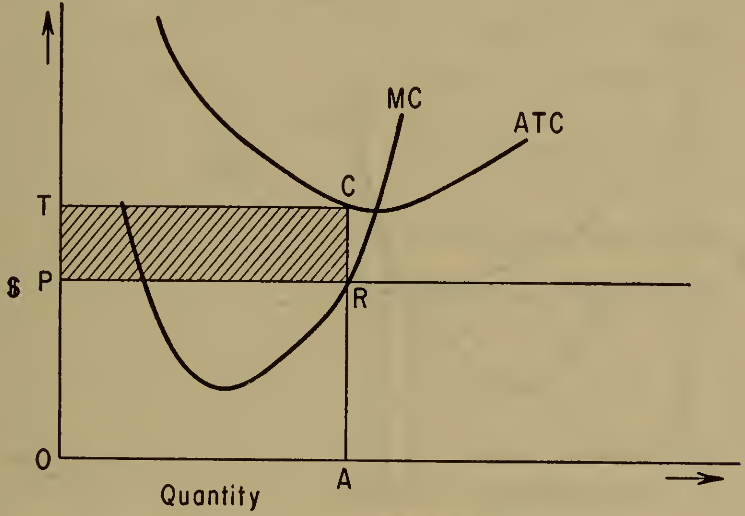

Fig. A-4. Short-run loss.

### The Short-Run Supply Curve

We are now in a position to elaborate the factors influencing supply in the short run that were briefly summarized in Chapter 11. Let us disregard any cost that may be involved in shutting down and reopening a firm's plant, or in dismissing and reassembling its labor force. (To the extent that the firm would continue to pay key personnel while not producing, the compensation of such personnel would be a part of the firm's fixed cost. But there may be special costs in shutting down and reopening—such as "dismissal" wages and training costs—that have to be ruled out to avoid complication.) Let us first consider the short-run supply curve of the firm, continuing to assume perfect competition and a perfectly elastic demand curve. The heavy line in Figure A-5 indicates the basis on which an individual firm will supply output in the short run. If price falls below $OP_1$, which is the minimum point on the firm's average variable cost curve, the firm will supply no output whatsoever. At $OP_1$, which is equal to marginal cost at the point at which the marginal cost curve crosses the lowest point on the average variable cost curve, the firm will be prepared to supply $OA_1$ units of output. As price rises, the firm's willingness to supply additional units will depend on the behavior of its marginal cost curve, as the heavy line indicates. Thus at price $OP_2$ the firm will be prepared to supply $OA_2$ units and at $OP_3$, $OA_3$ units. Thus, given perfect competition, the firm's short-run supply curve is that portion of its marginal cost curve which lies above the minimum point on its average variable cost curve.

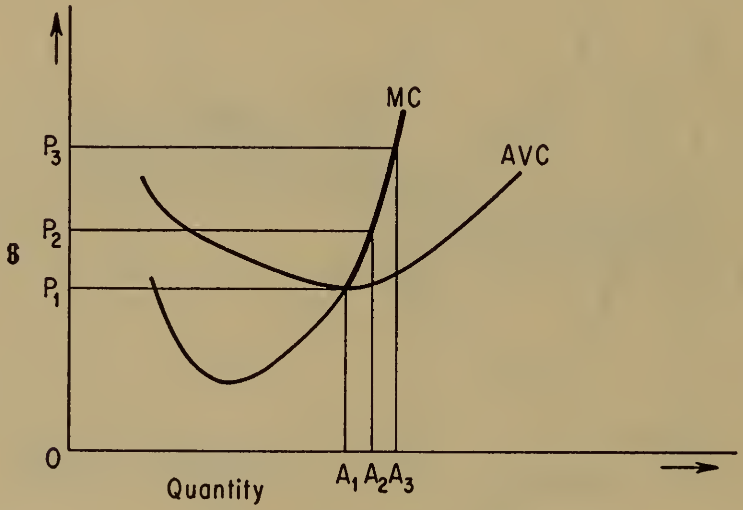

Fig. A-5. Short-run supply.

As noted in Chapter 11, the supply curve of an industry can be derived by aggregating the individual supply curves of the firms in the industry on two conditions. The first is that firms neither enter nor leave the industry; this, it seems appropriate to assume, is true in the short run. The second condition, discussed in Chapter 11, is that the expansion of the industry does not cause a rise in the price at which variable factors are supplied to the industry. Such an increase seems unlikely in the case of an expansion in the output of an individual firm—or at least an individual firm in a perfectly competitive industry—but it cannot be disregarded in the case of the industry's supply curve. Specifically, an individual wheat farmer may be able to increase his use of fertilizer (meaning a few tons) without having to pay a higher price. But if the wheat-growing industry increases its use (meaning millions of tons), price is quite likely to rise. Where this occurs, then the short-run supply curve for the industry will rise in a way that reflects both the rise in the marginal cost of the individual firms (apart from changes in factor prices) and the rise in factor prices needed to induce additional factors to enter the industry.

On the other hand, the elasticity of the industry's short-run supply schedule depends not only on the elasticities of the supply curves of the individual firms but also on differences in efficiency among firms. If all firms were equally efficient, the average variable cost curve of each firm would, of course, be identical and all firms would commence production at the same price (just high enough to cover their average variable cost at its minimum point). Where firms differ in efficiency, however, a given price may be high enough to induce some to produce but not high enough to induce others. An increase in the anticipated price in these circumstances may lead to an expansion of supply for two distinct reasons. The supply offered by the more efficient firms will expand by an amount that depends on the elasticity of their marginal cost curves. But, in addition, industry supply will expand as higher prices induce idle firms to commence production. To the extent of this latter effect, the elasticity of the short-run supply curve of an industry will be greater than the elasticity of the supply curves of the individual firms.

### The Case of Down-Sloping Demand

In the real world most firms operate with down-sloping demand curves. Where this is the case, the increase in the firm's revenue, or its marginal revenue, is less than its average revenue. As Table 10-2 makes clear, this is so because the firm, in computing its marginal revenue, must deduct from its average revenue for the last unit sold the loss in revenue on the preceding units resulting from the reduction in price necessary to enable the last unit to be sold. Since the difference between average revenue and marginal revenue arises out of the fact that the firm must reduce the price in order to sell an additional unit of output, the extent of the difference is a function of the elasticity of demand. The greater the elasticity, the less price will have to be reduced to sell an additional unit of output, and, therefore, the smaller will be the discrepancy between average and marginal revenue.

Despite the difference between average and marginal revenue, the determination of the optimum output for a firm facing a down-sloping demand curve is not greatly different from the determination of that for a firm facing a perfectly elastic demand. Figure A-6 illustrates the down-sloping average and marginal revenue curves facing a firm in imperfect competition, together with the firm's marginal cost curve. The best output, as always, is where marginal cost is equal to marginal revenue—or *OA*. At this output the firm can charge the price *OP*, because that is what consumers are willing to pay for *OA* units of the product. Whether price *OP* results in an abnormal profit or loss can, as already noted, be determined only with reference to the firm's average total cost curve, in the manner explained in Figures A-3 and A-4.

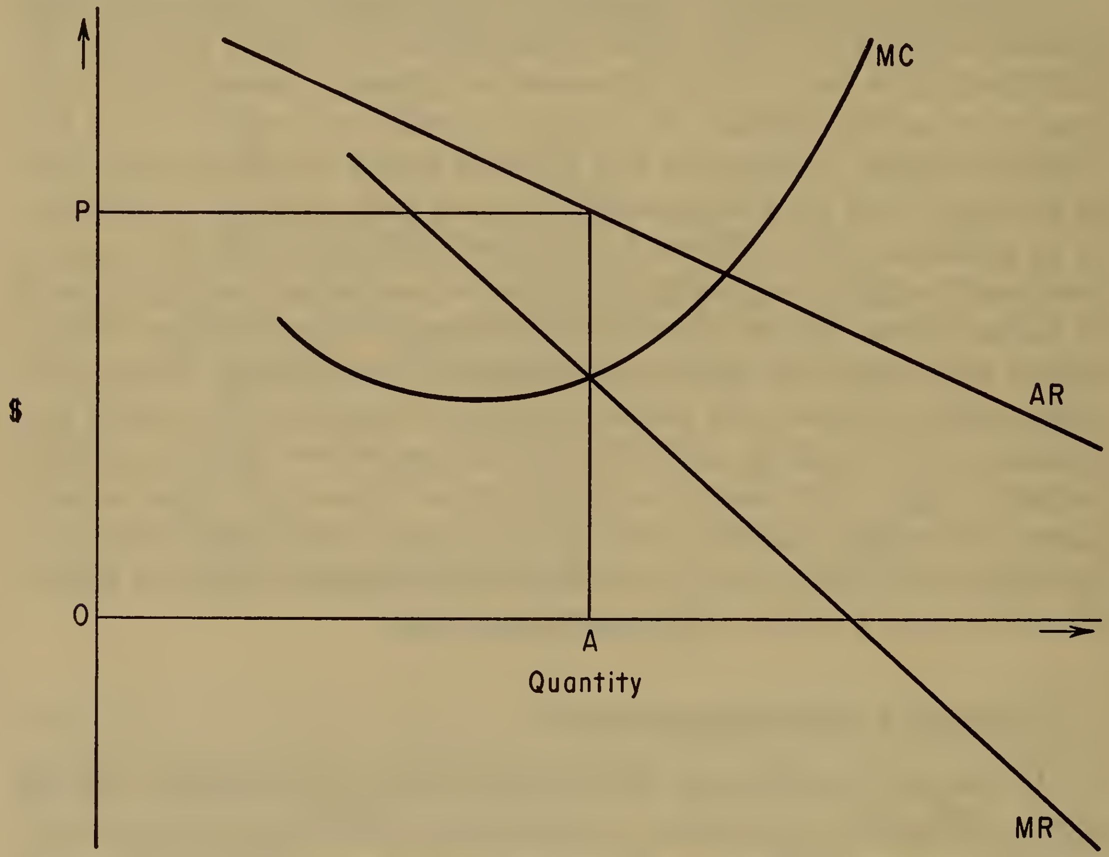

Fig. A-6. Output determination with imperfectly elastic demand.

### The Short-Run Supply Curve

Can the supply curve for a firm in imperfect competition be developed in the same way as for a firm operating in perfect competition—starting with the price and output at the minimum point on the firm's variable cost curve and indicating the additional output that would be supplied at higher prices on the basis of the shape of the firm's marginal cost curve? It is still true that the firm will not produce any output unless the price it can charge, determined as set forth in Figure A-6, is at least equal to its average variable cost at the lowest point on its average variable cost curve. Thereafter a new factor enters the picture, for the additional output that the firm will be willing to supply cannot be directly related to price, as the additional output to be produced will be determined by marginal cost in relation, not to price, but to marginal revenue. But marginal revenue is precisely related to price, or average revenue, in the manner set forth in the following equation: $MR = AR(1 + 1/n)$, where $n$ is elasticity of demand. Hence, to determine a firm's short-run supply curve giving the additional output which the firm will be prepared to supply at various prices, it is necessary to know not merely the shape of the firm's marginal cost curve but also the elasticity of the demand for the firm's product over the range with which we are concerned. With this information we can then determine the firm's short-run supply curve, and such curves can be aggregated into a supply curve for the industry—subject, once again, to the two conditions regarding entry and factor supply previously discussed in connection with firms in a perfectly competitive industry.

# 13

# Waste Due to Limitations on Price Competition

## Introduction

If monopoly profit is not quantitatively particularly important in the United States it follows that significant improvement in the organization of industry must involve the elimination of waste—defined as the incurring of costs that the consumer would prefer to eliminate. There are two main reasons why a consumer may pay costs he would prefer to eliminate: he may be ignorant of what is involved, or he may not be able to buy the product without the unwanted costs. Unwanted costs are unlikely in highly competitive situations because the consumer will have the option of transferring his patronage to a producer who does not incur such costs and is for this reason able to offer a lower price. Thus excessive costs are particularly likely where there are restrictions on competition, especially price competition. This chapter will deal with this aspect of the matter, and Chapter 14 will consider the problems raised by consumer ignorance.

In the discussion to follow we are more interested in practical than in theoretical results. In theory it is possible to argue that, whenever output takes place at a point other than the point of minimum cost on the cost curve, costs are excessive in that they are larger than they need be and, therefore, involve waste. One difficulty with such a definition is that it has no meaning in the situation, illustrated in Case II of Figure 11-1, where the long-run cost curve is falling throughout its relevant range. But even when we are dealing with the familiar U-shaped cost curve, equilibrium is possible at the point of minimum cost only where competition is perfect, for only a perfectly elastic demand curve can touch (be tangent to) the cost curve at its minimum point. A perfectly elastic demand curve, however, occurs only in the complete absence of differentiation, and differentiation cannot in fact be eliminated in most areas; it is almost inevitable that people should have preferences for particular sellers and particular products. Nor is differentiation new, despite the growth of modern advertising; situations in which people are indifferent among sellers and products have always been the rare exception. Thus anything approaching complete elimination of differentiation is in practice quite impossible to achieve.

But fortunately such a situation does not appear essential if we are primarily interested in practical results. The two cases presented in Figure 12-3 show that, with any given cost curve, costs are likely to be quite excessive if differentiation is marked, but only mildly excessive if differentiation is limited and the demand curve relatively elastic. Specifically, an A & P supermarket is clearly differentiated, but it is typically located where other grocery stores, including supermarkets, provide close substitutes. Hence the demand for the A & P's product is highly elastic and its cost close to the minimum possible level. Thus, in practice, the mere fact of differentiation need not concern us if close substitutes are available and the demand curve is relatively elastic. But keeping demand curves relatively elastic is, in the main, a matter of keeping consumers informed as to what is available; hence it will be discussed further in connection with consumer ignorance in the chapter to follow.

## Effects of Limitations on Price Competition

The elimination of price competition produces the same effect as would occur if the firm's product had become highly differentiated and its demand curve very inelastic. Where products are perfect substitutes, the slightest difference in price will cause a complete shift in clientele. In the intermediate case it is a balancing of the price and product of one producer against the price and product of all others that determines the elasticity of the demand curve. But suppose we have a standardized product sold by a number of retailers at an agreed price: each consumer will attach himself to the retailer whom he likes best *apart from price or product.* So long as factors other than price and product also remain the same, the retailer cannot possibly lose any clientele; he is superior to—and, therefore, completely differentiated from—all other sellers. Under these circumstances it is quite possible that the retailer's output will be small and his costs high.

Let us examine this possibility in some detail. Suppose that we start with a situation of imperfect competition such as is illustrated in Case I of Figure 13-1; this is perhaps the usual one with demand for the product relatively elastic and output not very far from the point of minimum cost. Let us assume that there are ten identical sellers, each of whom sells 6 units at a price of $3, so that in all 60 units are sold for $180. Now let us suppose that by agreement the price is raised to $6 as in Case II. (This is sometimes quite legal; in fact, we shall see that there are situations in which anything else is illegal.) Suppose, further, that the demand

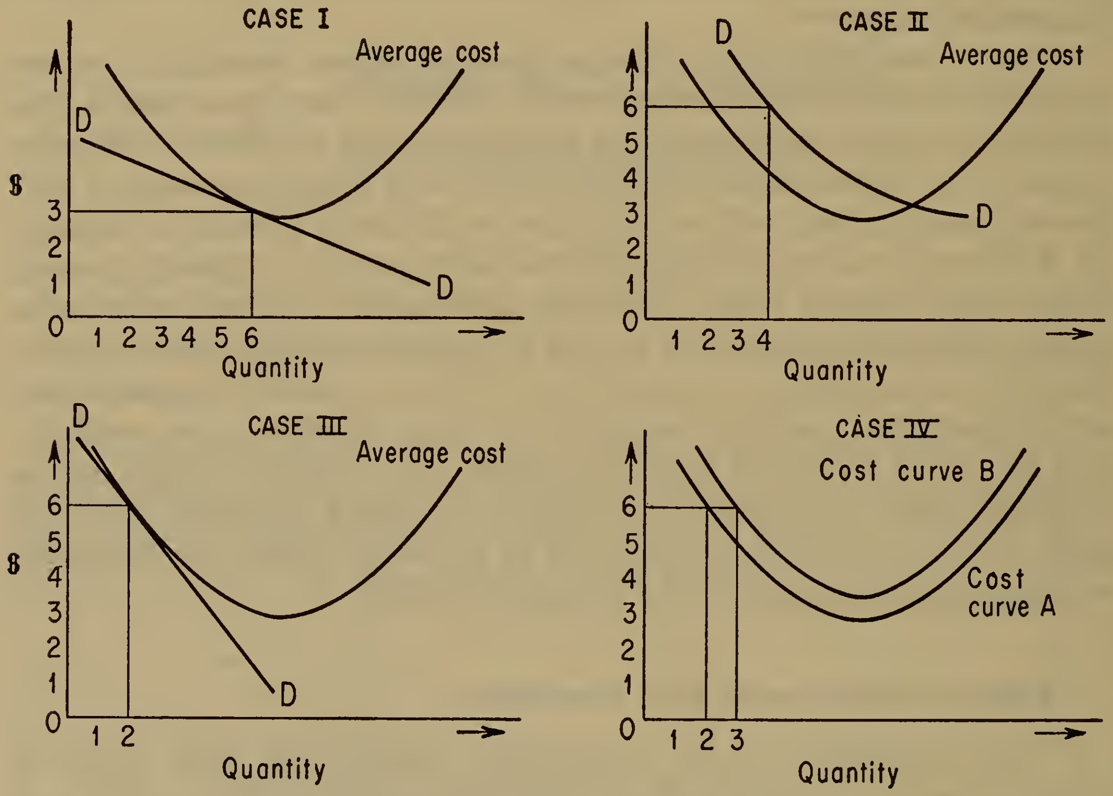

Fig. 13-1. Dynamics of imperfect competition.

for the commodity is inelastic and that the total sales only decline to 40 units, which can be sold for $240. In such circumstances the sales of each of the ten firms will amount to $24 and each will be not only covering his costs but making an abnormal profit as well.

If entry is free, however, the prevalence of abnormal profit will induce new firms to enter the industry. Just how the patronage of the industry will be distributed among the old and the new firms will actually depend on all the factors apart from price and product that attract people to, or repel them from, particular stores. But suppose that we assume that ten new firms enter and that clientele is distributed uniformly among the twenty firms now in the industry; then Case III applies, with each firm selling 2 units at an unchanged price of $6.

Let us be clear about what has happened. In Case I 60 units are bought at a total expenditure of $180, with 6 units being sold at a price of $3 by each of the ten firms in the industry. In Case III 40 units are bought at a total cost of $240, with 2 units being sold at a price of $6 by each of the twenty firms now in the industry. Note that, as far as the individual entrepreneur goes, the much higher price and substantial increase in total spending on the commodity have not left him any better off; in both Case I and Case III he is receiving no more than normal profit. True, more entrepreneurs are involved and this point is important, for much of the pressure for the reductions in price competition that result in the situations illustrated in Figure 13-1 arose during the thirties, when unemployment was rife and the provision of additional jobs seemed of major importance.

## Nonprice Competition

Case III is not likely to be the final adjustment. As new firms start to enter an industry in the situation illustrated by Case II, existing firms will not stand by idly but will, instead, try to hold their customers in a variety of ways.[1] Advertising outlays may be stepped up, store windows decorated with lavish displays, purchases wrapped in fancy material, and, above all, service increased by speedy delivery, credit extension, and the like. Some of the ways used to hold or obtain customers—such as the smile on the salesman's face—may cost nothing, but most have a cost. This means that the cost curve of the individual firm will rise as a result of the additional outlays. Thus if in Case IV cost curve *A* was the original cost curve, then in the changed situation cost curve *B* may emerge as a result of the added expenses of intensified nonprice competition. But if this happens, then the abnormal profits of Case II will be dissipated before ten new firms enter. Suppose that each of the original ten firms were to increase its costs from curve *A* to curve *B*; then each of the original firms would have eliminated abnormal profits while still selling 3 units. If, as this was taking place, five new firms entered and built their sales up to 2 units each (not illustrated), equilibrium in the industry would again have been established, for the fifteen firms among them would be selling 40 units at a price of $6.[2]

Note that, as before, even the original firms have no more profit in Case IV than they had in Case I or Case III. The difference is that the waste and excessive cost of Case III result from *unutilized capacity:* output is so small relative to that required for cost to be at a minimum that per-unit cost is quite high. In Case IV this sort of waste has been somewhat reduced when a firm operates on cost curve *B*, for a firm selling 3 units is closer to its minimum cost point than is a firm operating on cost curve *A* and selling 2 units. But the reduction has been exactly offset, for the industry as a whole, by the increase in cost resulting from intensified nonprice competition. From the social point of view both situations involve sales of 40 units at a price of $6; the choice between them depends on whether excessive cost resulting from unutilized capacity is preferable to excessive cost resulting from intensified nonprice competition. There can be no offhand answer. If intensified nonprice competition takes the form of rapid delivery, it is probably preferable to the waste involved when salesmen stand around a store with nothing to do. But if it takes the form of singing commercials, the idle salesmen are perhaps preferable.

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[1] One obvious possibility is to offer concealed price concessions, but this we are ruling out by assumption.

[2] It is possible that the additional costs may serve to increase the demand for the commodity in question. To the extent that this occurs, total sales of the industry—and presumably of each firm—will be larger in Case IV than in Case III.

To sum up, where there are limitations on price competition, costs are likely to be excessive as a result both of underutilizing capacity and of incurring additional selling expenses. But in the typical situation unused capacity is likely to be rather severely self-limiting, for it can usually be expected to lead to an increase in price competition; even excessive selling costs are unlikely to remain large if a producer who dispenses with them is able to lower his price. Hence, apart from consumer ignorance, excessive cost is likely to be quantitatively important only where there are *continuing limitations on price competition.*

## Fair Trade and Price Competition

Do we at present have any such areas in our economy? One is the area where "fair trade" prevails. But, first, a word of warning before moving from theory to application: Although most economists would agree with the analysis that has just been presented, not all would agree with the estimates to be presented of the importance of limitations on price competition and not all would accept the policy recommendations.

The "fair trade" movement developed during the thirties in response to the vigorous or, if you will, vicious price competition that then prevailed in a period of massive unemployment. The laws permitting "fair trade" are state laws authorizing actions that were exempted from the prohibitions of the Sherman Antitrust Act by specific act of Congress.[3]

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[3] The original federal act was the Miller-Tydings Act passed by Congress in 1937. It was replaced by the McGuire Act in 1952, which confirmed that sellers were bound by price maintenance agreements even if they had not signed them.

Such laws were at one time or other in operation in forty-five out of the then forty-eight states; they provide that a producer may sign an agreement with any retailer under which the retailer agrees to maintain a certain price for the producer's product. Once such an agreement is signed it becomes "unfair trade" for any other retailer, *whether or not he has signed an agreement,* to sell the product at less than the agreed price. If found to be selling at less, he may be sued by either the retailer or the manufacturer for punitive damages.

Closely related are price maintenance laws passed by a smaller number of states under which sales at less than cost are prohibited, cost sometimes being defined not only as what the merchant paid for a product but also some markup estimated to cover the "average" cost of retailing the product in question.

By and large the pressure for fair trade has come from retailers, especially druggists. It has been tolerated rather than encouraged by most manufacturers. The main exception involves smaller producers of prestige specialty products who fear that, if the price of their product is cut, consumers will judge quality by the lowered price or that, if the price is cut heavily by a few large-scale retailers (perhaps as a form of sales promotion), many small-scale retailers will retaliate by refusing to handle the product. Certainly the main pressure that retailers have been able to bring to bear on manufacturers is the threat that, if the product is not fair-traded, they will not handle it. Such pressure is effective for the reason that, if the leading brands of a commodity are sufficiently undifferentiated in the consumer's mind that price differences cannot be tolerated, then the main way by which sales can be expanded is to increase the availability of a given brand. Under such conditions any threat of refusal to handle a brand can be serious for a manufacturer; this is the threat that druggists have used with great effectiveness in their field.

Actually, if his outlets are *not* reduced, a manufacturer may not object to price cutting at the retail level (though he may not say so for fear of losing outlets). If his goods are cut more than those of others, his relative sales may expand and, even if no more than the reduction of others, it may lead to an expansion of total sales and will certainly help to maintain his products against the inroads of the "private brands" of large retailers, which are a natural defense against fair trade. In the case of retailers, many high-volume, low-cost firms object to fair trade; in fact, fair trade has helped to develop the "discount house," which specializes in selling goods at less than their list price. But, as most retailers tend to be high-cost sellers with a low volume, they have by and large favored fair trade and objected to the "price chiseling" of mass marketers.

### Mandatory Fair Trade

The extreme form of fair trade involves "mandatory" fair trade, which has been applied by some states to alcoholic beverages. Under such a law no liquor may be sold in the state unless its price has been fair-traded; enforcement is often quite effective, for a retailer caught violating the law may have his license to sell liquor revoked. Since this is the sort of result that advocates of fair trade would in general like to achieve, liquor distribution under mandatory fair trade is worth examining. The situation in New York City after World War II is particularly interesting because, to provide opportunities for returning veterans, the basic licensing law, which sets the minimum distance that has to be maintained between liquor stores on main highways, was reinterpreted to construe crosstown streets as main highways, so that entry into the business for a time was quite free.

Rarely have theoretical results been so completely confirmed by experience. Underutilization of capacity in liquor stores is pronounced; if such stores were to handle anything like as many customers as grocery stores handle, there would be a marked increase in their sales. Window displays are typically extensive—partly because there are times when the salesman has nothing else to do. Delivery is rapid, and only the fact that the law forbids it bars extensive use of charge accounts. Moreover, the trade journals have recently complained bitterly of inadequate earnings and have succeeded in greatly reducing the issuance of new licenses—having ultimately learned that high prices without limitations on entry are no guarantee of high earnings.

What is the case for mandatory fair trade? One argument is that lower liquor prices would induce an undesirable increase in consumption, so that fair trade promotes temperance. The argument, however, has little merit, as the same ultimate price to the consumer could be achieved without waste of productive factors if savings from more efficient distribution were balanced by higher liquor taxes. In fact, the increased availability that results from a large number of small stores—which is often cited as a virtue of the present system—would appear to promote intemperance!

Aside from temperance, it can be argued that mandatory fair trade makes more jobs available and that, if it were ended, a number of firms would be driven out of liquor retailing. This argument can, of course, be used to defend all kinds of waste. It is therefore important to understand that the elimination of wasteful jobs *usually* does not reduce overall employment; it merely shifts workers to areas where they are more useful. The money saved by buying liquor at lower prices is *generally* spent for other things, thus creating as many jobs in other areas as are eliminated in liquor retailing. It is true that this need not occur; it is possible that the money saved may not be spent for anything but instead held idle. Section IV is devoted to the problems that arise when this happens, but we may anticipate here to say that the elimination of waste is not *in general* responsible for inadequate spending.

### The Size of the Waste under Mandatory Fair Trade

How much waste is involved? In the New York example average prices are set so as to allow liquor stores to retain about 20 percent of the sales dollar. In contrast, food supermarkets receive perhaps 12 percent, despite the fact that much food is perishable and its value per item far lower. It is quite possible that, if liquor were retailed by supermarket methods, the retail price might be reduced by not less than 12 percentage points, leaving the retailer with 8 percent rather than 20 percent of the price as compensation for his services. At a level no higher than this a number of large-volume retailers manage to operate profitably in the District of Columbia, which does not have fair trade.[4] Keep in mind that liquor is an easy product to retail—hence liquor store margins are not particularly high as margins go—and that roughly half the retail price paid for liquor represents tax. Thus the 20 percent margin set under mandatory fair trade is perhaps 40 percent of "economic" cost (cost apart from tax), and a reduction in the margin from 20 to 8 percent would represent a 24 percent reduction in "economic" cost.

This result is based on a comparison of the present system of liquor distribution with what might be achieved in a supermarket. To achieve the saving estimated, therefore, everyone would have to patronize liquor supermarkets. What about those wanting additional services? The costs of wanted services do not, of course, involve waste. Perhaps half of all liquor sales in the District of Columbia are made by high-volume, low-markup stores that provide a minimum of service; but the rest are made by "neighborhood" stores that provide various additional services, especially delivery. Detailed information regarding margins is not available; but it appears that, because of competition of the lower-priced stores, the "neighborhood" outlets generally manage to operate successfully while retaining an average of no more than 16 percent of the retail price. If sales were equally divided between each type of store, then the average cost of retailing would be 12 percent (16 plus 8 divided by 2) of price. On this basis it appears that elimination of mandatory fair trade would bring about an average reduction in price of 8 percent, or 16 percent of "economic" cost. Elimination of mandatory fair trade, of course, would not mean the end of small-scale retailing—any more than supermarkets have meant the end of the corner grocer. But it would mean that consumers could obtain the exact type of retailing service they desired at a significant overall reduction in cost.

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[4] There are those who say—perhaps quite falsely—that this is because Washington is a place where Congress drinks but has no retailers as constituents!

### Other Wastes Due to Limitations on Price Competition

Although liquor provides the best example, if our only problem were the promotion of temperance by a certain amount of built-in inefficiency in the retailing of liquor, the whole matter would certainly not deserve so much attention. But limitations on price competition made possible by fair trade are far less important overall than those which result, under present conditions, from other influences. In any situation where the consumer has little preference among at least the major brands of a commodity, price differences are likely to be intolerable—and price competition, therefore, relatively rare. Where products are not effectively differentiated, the elasticity of demand for major brands will be quite high; as a result, a price reduction by any one brand will expand its sales appreciably, but only if the prices of other brands remain unchanged. Because an appreciable expansion will not be tolerated by other producers, they can be counted on to meet any price reduction of a major competitor. Under such circumstances, with price competition by producers effectively ruled out, a major alternative way of expanding sales is to increase the availability of any given brand, so that consumers will always find it when they want it and never be tempted to purchase a rival product. But to induce small retailers with a low volume of business to carry a particular brand, it is necessary to give them a high markup. At the start, when the number of sellers is small, large profits may temporarily result, as in Case II of Figure 13-1. But in such circumstances the high profits will result in an increase in the number of outlets and each outlet will in turn attempt to retain clientele by providing a high level of service, so that the situation illustrated by Case IV will soon emerge.

Why does not the individual retailer try to increase his sales by lowering his price? In many cases this is exactly what he does. But the producer may attempt to restrain the price competition because he fears it will either hurt the reputation of the product or lead other retailers not to handle it. Or he may fear that a price war at the retail level will spread to the wholesale level and involve him; an outlet involved in a hot price war may receive special concessions from one producer, which, when they become known, will have to be matched by other producers. Hence a price war starting at the retail level is likely to end by reducing the profits of all producers and so give them a strong incentive for discouraging price competition throughout the economy. In short, there are certainly pressures in the economy that tend to restrict price competition and extend to other areas of the economy the waste and excessive costs found most clearly under mandatory fair trade.

### An Example of Restrictions on Price Competition

Actually we shall conclude that restrictions on price competition on an overall basis have not been particularly effective in the United States. Before exploring this happy conclusion further, it is worth making clear that restrictions *can* raise serious problems. To illustrate what can happen—and, therefore, the importance of preserving competition—let us examine a case where competition has come to be broadly restricted. Consider the following account of life in Switzerland, as described by Michael L. Hoffman when he was stationed there as economic correspondent of *The New York Times* in 1952:

> What Karl Marx in the Eighteen Fifties called "capitalism," as a term of opprobrium, has developed since his time very differently on the two sides of the Atlantic. This fact is not generally recognized. . . . There is a tendency, strenuously encouraged by Communist propaganda, to accept the idea that "capitalism" in Europe and "capitalism" in the United States of today are nearly identical.
>
> . . . The root cause of much of the difference in European capitalism . . . is what has come to be known as the cartel system and, even more, the cartel mentality. The cartel system as practiced in Europe permits and in many cases encourages business organizations to make and enforce agreements that prevent competitive pricing and provide for each unit of the group a protected regional or local market. . . .
>
> The broad effects of this are that price competition in Europe is rare and surreptitious and that business feels relatively little compulsion to keep up with the times or adapt itself to changing circumstances. And as for the consumer—well, he just doesn't count.
>
> We Americans who live in Europe get a rather special, consumer-angle, view of these problems. Unlike many Americans at home, we do not think of the cartel system in abstract terms of industrial power, or in terms of rich men in striped pants who sit in their offices and evilly manipulate mines, factories and syndicates into great combines for huge profits. We have in mind rather the butcher, the plumber, the milkman, the electrician around the corner—nice, amiable, and often generous people, but people who subscribe to a system which, to an American, seems inhibiting and unnecessarily expensive.
>
> . . . I happen to live in Switzerland, where private business, as a social institution, is more deeply entrenched than anywhere else in the world, not excepting the United States. . . . Our American friends stationed in other parts of Europe tend to envy us for living in a stable, well-ordered country—until

they learn what things cost. Yet in some respects—because of the cartel system used by the small Swiss entrepreneurs—as consumers we have about as much effective freedom of choice as if we lived in Moscow.

Item: We install a new electric water heater after the old one gives up the ghost. Only a certified electrician can hook it up. . . . We have had so much trouble getting the man in our suburb to come that we try to hire a firm in the city. Nothing doing. The local man has a "right" to the job. We wait two months.

Item: A neighbor moves a couple of miles across country. He wants to keep his milk service as before. Not a chance. The company he liked to deal with cannot deliver in the new territory as that "belongs" to another supplier.

Item: Switzerland produces several excellent beers. But no store will furnish us at home with more than two choices, neither of which we particularly like. . . . There's no governmental restriction on importing or selling beer, just a private arrangement to keep the market "orderly." Result: We seldom buy beer.

Item: Our refrigerator goes haywire. I go to the firm that sells the brand . . . and get an estimate on the repairs, which . . . seems excessive. Determined, for once, not to take it lying down, I canvass other dealers and repair shops in the city. Not one will even look at the job. I either pay the price I'm given by the one firm or sell the thing for junk. . . .

Whatever the foreigners think, the Swiss are wholly satisfied with their tight little system. This is partly because nearly everybody . . . gets into the act at one stage or another. . . .

Neither the Swiss nor other Europeans have ever known what it is like to live in a system where combinations of private persons to regulate prices and markets were *ipso facto* illegal or even unpopular.[5]

## Limitations on Price Competition in the United States

Against the background of this description of what *can* happen when restrictions on price competition become widespread, let us attempt an appraisal of the overall amount of waste in the American economy resulting from limitations on price competition. Note, first, that efforts to establish fair trade in the United States have *in the main* broken down. Although we saw that savings from eliminating mandatory fair trade might run as much as 16 percent of "economic" cost, mandatory fair trade has never applied to as much as 1 percent of retail sales. Further, it is unlikely that goods accounting for more than 5 percent of retail sales were ever voluntarily fair-traded, and the percentage is undoubtedly significantly lower today both because fair-trade laws remain valid in only about thirty out of the fifty states and because a number of major manufacturers have given up efforts to enforce fair-trade contracts.

It is true that efforts to maintain retail prices need not involve fair trade. Efforts, by fair trade or otherwise, to maintain retail prices have in fact been made for most drugs and cosmetics, some furniture, clothing, housewares, and hardware, together with most books, many small appliances, and some tobacco products. But retail price maintenance is not easy to achieve where old models are traded in on new models—as in the case of cars. The old model may be appraised at a price much in excess of its real value, making list prices meaningless. Nor is it necessary to trade in an old model to benefit, for the fact that an old model can always be bought secondhand just to trade means that retailers end by offering open discounts to save themselves the trouble of disposing of junk. The increasing importance of replacement sales of most major appliances, together with increasing competition resulting from expanded production capacity, goes far toward explaining the breakdown of list prices that started in the early fifties. The result has been that most major appliances are available at a discount in most urban areas. In all probability, prices are best maintained (and wastes therefore largest) in small communities, where dealers are few in number; but organizations such as Sears, Roebuck have done much to limit the ability of even small-town retailers to maintain list prices.

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[5] Published in *The New York Times Magazine* on March 9, 1952. Reprinted by permission.

Among different products prices are generally best maintained for items whose price is small—ranging from drugs to small appliances. In such cases seeking an alternative involves far more effort per dollar of saving than is true in the purchase of a major appliance. Gasoline is a good example. A man driving 12,000 miles at 15 miles a gallon will spend as much on gasoline in a year as he might on a major appliance, but perhaps fifty separate transactions are involved. Halving the typical retail margin of 5 cents a gallon would save $20 a year. Such a saving might well be sought if a single purchase of an appliance were involved, but if offered at the rate of 40 cents a transaction, it is hardly worth much of an effort to find a price-cutting service station. As a consequence, although gasoline sales are up fivefold since 1925, the gallonage sold per service station has changed little. The resulting overcapacity of service stations and their need to take on all sorts of additional activities to fill in otherwise idle time is notorious.

Nor is the problem confined to distribution; many producers do not engage in price competition. Where, however, the product is not standardized, it is not clear that appreciable harm results, especially if models and their prices change frequently. Giving more for the money by improving the product is in essence a form of price competition. It is for this reason that attention has been focused on distribution. But where the product is standardized at the manufacturing level—cement, sulfur, carbon steel—excessive cost may well be present on a significant scale. And, despite the Sherman Antitrust Act, price rigging among allegedly competing manufacturers obviously still continues—as witness the recent widespread violations admitted by all major manufacturers of certain kinds of electrical equipment.

### Waste Due to Limitations on Price Competition

On balance, however, we appear to be a relatively unruly nation that takes considerable pride in outwitting the stratagems of sellers to restrain price competition; many of us derive pleasure from "price chiseling" appreciably in excess of the dollars saved. So long as these conditions continue rather than those which have developed in Switzerland, waste is likely to be held within manageable limits. But suppose that a law were passed making it illegal to establish, maintain, or otherwise influence, or attempt to influence, the *resale price* of any product. If enforced, such a law would mean that each seller would be free to set the prices of the things he sells without fear of any kind of retaliation from the manufacturer or wholesaler from whom he buys. This is, of course, the situation that in fact applies in many fields; for example, in the retailing of groceries, which is by and large a quite efficient operation. What would happen if the rest of retailing were made equally competitive and at the same time the enforcement of the Sherman Antitrust Act was greatly strengthened in other areas of the economy?

The answer is obviously controversial. Primarily to provide a notion of the relative importance, in my judgment, of promoting more effective price competition compared with other ways of improving economic performance, let us offer the tentative estimate that, if the suggested changes were made, the resulting increase in price competition might, within five years, bring about an elimination of waste and excessive costs equal to perhaps 3 to 5 percent of the national income, with an elimination of perhaps twice as much possible over a longer period. To the extent that these estimates are correct, it follows that over time greater price competition might free for other uses 5 to 10 percent of our productive factors. But it is worth stressing again that, in view of the inadequacy of our information, the estimate can be taken as registering, in essence, the impression that greater price competition would bring about a significant increase in the performance of the American economy.

# 14

# The Overall Impact of Waste

### The Meaning of Consumer Ignorance

In this chapter we shall first consider the relationship between consumer ignorance and waste and then consider the overall impact of waste on the performance of our economy.

We are first interested in exploring the extent to which waste occurs because the consumer *does not know what is known or can easily be known.* Note that we are *not* interested in changing the consumer's *basic tastes or desires.* Is it possible to reduce consumer ignorance without changing basic tastes? In an ultimate sense it is not: tastes and desires are an inevitable reflection of what a person knows—which makes the usual demand curve based on "unchanged tastes" a more complicated concept than is often realized. But a practical distinction seems possible. Suppose, for example, that I have a basic desire for aspirin and a belief that Bayer aspirin is a sufficiently superior brand to justify paying a premium price. If it is called to my attention that all aspirin is medically the same, I may cease to be interested in paying a premium for Bayer's product without losing my basic desire for aspirin.

### The Benefits of Knowledge

Note that this assumes that I am interested in buying *aspirin* as such. Even if I know that all aspirin is medically identical, I may still quite sensibly purchase Bayer to impress my father-in-law with the fact that I can afford the "very best." But in this case I would be buying, not aspirin, but *reputation.*

More complicated is the argument that advertising is justified because it adds as much to consumer satisfaction as it costs. Concretely, suppose that Bayer's advertising costs 10 cents a bottle. Is it possible that the additional satisfaction a consumer gets from being convinced by the advertising that Bayer is superior is as large as the satisfaction he would get from any alternative use to which the 10 cents might be put? Conceivably. But it is also conceivable that an Indian gets more satisfaction from $100 than an American does from $10,000! In other words, what this argument raises is the presently unanswerable question of the relationship between satisfaction and real income. But, even if *proof* is impossible, there appears to be a generally accepted *presumption* that more real income *is* desirable and *will* increase satisfaction. In the same way, it seems appropriate to assume that, if additional knowledge frees factors *over and above the factors needed to provide the additional knowledge,* the economy will on balance benefit.

There are three main benefits likely to result from the reduction of consumer ignorance: the allocation of *existing production* among consumers may be improved; *distribution* (in the sense of the process by which goods are moved from the manufacturer to the consumer) may be improved; and the *goods produced* may be improved. Let us examine each of these possibilities.

## The Allocation of Existing Production

At any time there is on hand an inventory of goods that have been produced but not as yet bought by a final purchaser. It is perfectly possible that additional knowledge regarding the products available will cause Consumer A to pick Product A in place of Product B and Consumer B to pick Product B in place of Product A and that the *satisfaction of both consumers will thereby be increased.* Specifically, if A lived where electricity cost little but water was scarce and intended to buy a washing machine using little current and lots of water, while B lived where current was expensive and water cheap but intended to buy a machine using lots of current and little water, then *both* would benefit if additional knowledge caused A and B to swap machines. But this is obviously only possible when A has different requirements from those of B. Although there clearly are cases where requirements differ, the more general case appears to be that in which requirements are substantially similar, so that additional knowledge merely serves to permit A rather than B to get the superior machine, with no net benefit to the economy as a whole.

It follows that, though improving allocation of existing production has a contribution to make, the full benefit from reducing consumer ignorance can be measured only over a period of time and must take into account the repercussions of greater knowledge on distribution and production.

## Ignorance and the Character of Distribution

How does consumer ignorance affect distribution? Suppose that I want to buy a washing machine and know nothing about the relative merits of the various brands. Then as a consumer attempting to be intelligent the best I can do is to visit a number of showrooms and obtain as much information as I can by talking to salesmen and twisting the dials on the models available—though neither activity is likely to cast much light on the relative ability of the machines to remove dirt from clothing. We may set no value on the time I spend because it would not otherwise have been sold for money (and so, on one definition, has no economic value). But the time may well have value to me in that there are other things I would prefer to be doing; and in any event we must count the cost of providing the salesman's spiel and the place for me to listen to it. Suppose that I decide to investigate five machines before buying. Then the cost of providing five salesmen's spiels and five showrooms must ultimately be met out of the price of the machine I buy.[1] Note that the more conscientious I am, the higher the ultimate price will have to be!

Suppose, on the other hand, I subscribe to *Consumer Reports* and accept its judgment as to the best machine. Then it is quite possible to arrange to buy the machine without taking more than a couple of minutes of a salesman's time; there is, in fact, no reason why the order should not be placed with a central distributor by mail or telephone. Suppose, for example, on the basis of *Consumer Reports* a consumer decides on a particular portable television set (not requiring installation); does not want a service contract; and is prepared to pay cash. In this case, as noted in Chapter 4, all that the retailer does is to write the order, accept the check, and arrange for the set to be delivered—perhaps from a central warehouse. It is clear that differences in consumer knowledge can lead to vast differences in the character and cost of distribution.

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[1] This disregards the possibility that the stores in question may have excess capacity. Although this may certainly be true at any particular time, over a longer period the number of salesmen employed is likely to be relatively closely related to the average number of spiels required per machine sold.

### Ignorance and Product Design

It is easy to argue, as one looks at what is produced in the United States, that we produce what we do only because consumers "don't know any better." Perhaps so; perhaps the Victorians should have "known better" than to like Victorian things! But, as already noted, the meaning of "ignorance" with which we are concerned does *not* involve changes in basic tastes; our problem is only to examine how well our economy caters to such tastes. On the other hand, the increasing complexity of modern life certainly makes it more and more difficult for a consumer to choose intelligently on the basis of the information normally available to him. Undoubtedly there are many sloppily engineered and produced products on the market simply because consumers have no way of detecting their inadequacies before purchases are made.

But, with given tastes and desires, what can be achieved is easily exaggerated. If mass production is to be attained, products must be designed for the *average consumer,* which means that many will inevitably dislike the result. Moreover, the technically best product is not necessarily the most economical; to build a battery with the longest possible life may be so expensive that the cost per month of its life may be higher than that of a battery which is technically inferior. Products that are selected in some part on the basis of style—which would include many if not most products at the present time—offer special difficulties. It is easy to argue that an industry changes styles deliberately to increase expenditure on its products, and then defends their poor quality on the ground that they will be out of style long before they wear out! But style changes, at some rate or other, are clearly desirable—else how could we have emerged from the Victorian era? Even the Soviet Union now has fashion shows and a cosmetics industry, both of which will undoubtedly soon be criticized by Russian husbands as encouraging "wasteful" spending by their wives! The socially desirable rate of style change is obviously not easy to determine.

There is a considerable range of products, however, where style is relatively unimportant and performance the major consideration. In this area much can be done, for competition between products in the market place can be an effective device to achieve maximum satisfaction of consumer desires with minimum use of scarce resources only where the consumer knows reasonably well the relationship between the products offered and the satisfactions they will yield. Hence, where consumers lack the knowledge to relate products and their prices with reasonable accuracy to the satisfactions they yield, waste and lowered economic performance inevitably result.

## Differentiation and Waste

In discussing the impact of ignorance on production, we have thus far concentrated on product design. But utilization of capacity may also be affected. The main purpose of selling effort, including advertising, is to differentiate the product involved. To the extent that it succeeds, it makes the demand curve relatively inelastic. As Figure 12-3 demonstrates, the more inelastic the demand curve, the higher above the point of minimum costs will equilibrium be reached—and the greater will be the waste caused by underutilization of capacity. Differentiation is undoubtedly in some cases highly effective. When Macy's advertised that the ingredients of its private brand of aspirin had by law to be the same as those of other brands, it increased the sales of its own brand, but it also increased its sales of Bayer aspirin at an appreciably higher price. In other words, Bayer had successfully differentiated its product in the minds of a significant minority of aspirin buyers, making likely the equilibrium illustrated in Case II of Figure 12-3 and the waste that it entails.

But note that differentiation may be ineffective even if it attaches firmly to its product as much as 90 percent of the desired clientele. For if 10 percent remain indifferent and have to be lured by price, then—provided the 10 percent are essential to the producer—price must be set as if the product were undifferentiated.[2] Put more technically, differentiation may cause *part* of the demand curve for a product to rise because *some* consumers have become willing to pay more for it than before. Under such circumstances it may pay a producer to reduce his output, raise his price, and confine his sales to those especially fond of his product. But, if there are consumers who remain indifferent to the product, it means that the part of the demand curve which includes such consumers is *unchanged*. Hence, if such consumers are to be reached, no higher price than before can be charged and the differentiation will not in fact have benefited the producer in any way.

Keep in mind that efforts by one producer to differentiate his product usually lead to reprisals by rival producers, so that the overall extent of effective differentiation may be relatively limited. Cigarette advertising, for example, undoubtedly makes some consumers willing to pay more for a particular brand. In such a situation a producer may respond by accepting a low volume and charging a high price to those especially attracted to his product. But producers seeking a high volume do not dare diverge on price, even though they doubtless have many loyal customers who would be willing to pay a higher price for their particular brand. For such producers must seek the trade of smokers who have little or no preference for any brand and who, therefore, react rapidly to any difference in price.

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[2] This is so unless the producer can charge the differentiated 90 percent a higher price than the undifferentiated 10 percent, which is not usually feasible.

In short, efforts by one producer to differentiate his product are often frustrated by retaliatory efforts on the part of other producers. But, to the extent that differentiation is successful, it makes the demand curve for a product relatively inelastic. This, in turn, means that equilibrium is likely to be reached well above the minimum point on the firm's average cost curve (as illustrated in Case II of Figure 12-3). Hence the more successful the differentiation, the greater is likely to be the waste due to underutilization of capacity.

### Waste and Monopoly

To what extent does monopoly lead to waste? Figure 12-2 suggests that output under monopoly can be before, at, or after the point of minimum cost. Actually economists have tended to associate monopoly with operations *before* the minimum cost point; this inevitably follows if we *start* with a competitive situation and then introduce monopoly with no change in cost conditions. Though developed for a different purpose, Case II of Figure 13-1 would provide an illustration of the sudden impact of monopoly if the price increase resulted from the ten original competitors being bought by one firm, which thereafter was able to prevent entry into the industry. In this situation the emergence of monopoly has clearly led to excessive costs. But why should this condition endure? Capacity always has to be adjusted to the demand anticipated in the future. Both monopolists and competitors in general strive for capacity whose minimum cost point is as close as possible to the average output likely to be demanded over the period *during which capacity cannot be changed.* But the facilities of a monopolist for anticipating future demand would seem, if anything, superior to those of a competitor. In other words, faulty estimation may cause excessive capacity for either monopolies or competitors, but at the very least there seems no reason why estimation should be faultier for monopolists than for competitors.

Does this mean that, apart from estimating errors, excessive profits are a proper measure of the antisocial impact of monopoly? The answer is that they are so long as we are dealing with "monopoly."[3] For by definition monopoly is a situation in which entry into an industry is

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[3] Possible effects of monopoly on the market for the factors of production are considered in Part III.

*impossible.* Such a pure monopolist can seek the best possible adjustment of long-run costs to long-run demand, thereby maximizing his profits and, in ultimate long-run equilibrium at least, completely eliminating excessive costs—as in Case II of Figure 12-2. But in practice we have practically no unregulated monopolies and considerable instability within most oligopolies. Hence it is quite possible that excess capacity is *permanently* maintained as a device to discourage entry of new firms by making possible rapid expansions of output and retaliatory price cutting—leading to the continuance of Case I of Figure 12-2 on a more or less permanent basis. In fact, it is possible to argue that the greater prevalence of the "quiet life" where monopolistic influences are strong means that adjustment of capacity to demand will in such cases be less precise than under competitive conditions, where there is likely to be greater pressure to eliminate waste. But overall it seems fair to say at the very least that it is not clear that waste is any greater where monopolistic influences are strong than where a greater degree of competition prevails.

To sum up the discussion thus far, where there are no restrictions on entry, there will be no monopoly profits; in this case the social problem is one of excessive cost. To such cost and the waste that is involved, consumer ignorance contributes to the extent that it permits increased differentiation and a more inelastic demand curve. Pure monopoly, on the other hand, may—at least in long-run equilibrium—involve no waste whatsoever, so that the social problem would consist entirely of monopoly profit (which we have seen is not of major importance). But, in practice, entry is unlikely ever to be completely free or monopoly ever to be completely pure. As a result, some monopoly profit, as well as excessive cost, is likely to be found under conditions of imperfect competition, especially where demand is sharply differentiated and hence relatively inelastic. And some excessive cost, as well as monopoly profit, is likely to be found where limitations on entry give rise, not so much to monopoly in the strict sense of the term, but to an oligopoly where there are no more than a handful of sellers.

## Waste Due to Consumer Ignorance

What is likely to be the overall impact of waste due to consumer ignorance? Even more than before it is essential to specify the time period with which we are concerned, as educating consumers will inevitably take time, and to keep in mind that providing consumers with additional information itself has a cost. Once more primarily to provide a notion of the relative importance of consumer ignorance, let us offer the tentative suggestion that a greatly expanded program of consumer education might, within five years, lead to a saving, net of the costs of providing the information, of perhaps roughly the same amount as can be expected from more intense price competition—say, something in the order of 3 to 5 percent of the national income. But considerably larger savings are conceivable, perhaps amounting to as much as 8 to 12 percent of the national income over a period—perhaps twenty to twenty-five years—long enough for the increase in consumer knowledge to have significant repercussions both on the organization of distribution and on the character of production. Once again the highly tenuous nature of these estimates needs to be stressed. Their purpose is basically to suggest that, in the short run, wastes due to both consumer ignorance and limitations on price competition are likely to be far more important than the harm of duplicative advertising or monopoly profit, but considerably less, for example, than the waste caused by the unemployment of a major business cycle.

### Waste and Economic Development

One qualification is in order. In one sense the higher estimates of what is possible in the longer run—amounting to perhaps 15 to 20 percent when increases in price competition and improvements in consumer knowledge are combined—are not based exclusively on improvements in the economizing process with which this section is primarily concerned. Rather they perhaps imply faster economic development, as improvements of 15 to 20 percent are probably larger than would be possible without what may be considered to be changes in technology—which are assumed not to occur in the usual discussions of economizing. Hence our estimates appear justified only if allowance is made for some improvements in the technology actually in use as a result of increased competition and greater consumer knowledge.

To illustrate, the chain store and the supermarket represent technical improvements of major importance that between them have revolutionized the distribution of groceries. Had there been effective limitations on price competition—as a result of fair trade or otherwise—it is quite unlikely that any such revolution would have taken place and food would probably cost significantly more. Again average department store markups in some departments today are estimated to be as high as 40 percent, contrasted with the 10 to 15 percent markup in the discount houses. Obviously the two markups are not directly comparable: the department store provides many services that a discount house does not. But this misses the heart of the matter, for what the discount houses *have* done is to make the retailing of appliances far more efficient—just as supermarkets did in the retailing of groceries. This does not mean that department stores are going out of business, any more than charge and delivery grocery stores have gone out of business. But it does mean that the overall efficiency with which appliances are retailed is significantly greater, and overall costs are significantly lower, than they would have been had discount house competition not developed. In one sense such changes may be considered to involve improved technology, though in another they are no more than the application of known technology to areas where introduction had previously been prevented by lack of price competition or consumer ignorance.

### The Inefficiency of Gasoline Retailing

Where a revolution has been successful—as have supermarkets in the retailing of groceries—there is likely to be little argument. But gasoline retailing remains inefficient. In general, this does not appear to be the result of concerted efforts by the major oil companies to eliminate variations in prices; a recent survey found significant differences within a given area even among stations selling the same brand of gasoline.[4] But gasoline is now taxed to the point at which a 40 percent reduction in the retail margin would probably permit a decrease in the retail price of no more than 6 or 7 percent, making it unlikely that economies in the retailing process would bring about any significant increase in total sales. In view of the limited expansion of sales and the likelihood that new retailing techniques would set off price wars that might spread throughout the industry, it is understandable that gasoline producers are reluctant to experiment. But how, then, can we achieve high-volume, low-cost, centrally located stations selling at the lowest possible margin? Or self-service stations, which, when equipped with pumps that shut off automatically, appear technically feasible? Some improvement has resulted from the increasing importance in recent years of independent distributors, who tend to concentrate on a limited number of strategically located outlets designed to do a large gasoline business, with customers attracted by the lower price that lower costs make possible. But penetration by such distributors is likely to be severely limited as a result of both consumer ignorance regarding the quality of the gasoline (usually obtained from, and identical with, the gasoline of major producers) and the unwillingness of major producers to allow any major expansion of independents. Hence it may well be that a revolution in gasoline retailing will not come until major producers are prohibited from refusing to sell to those cutting prices or operating self-service stations, and consumers come to have greater knowledge of gasoline quality.

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[4] S. Morris Livingston and Theodore Levitt, *Review of Economics and Statistics,* May, 1959.

### Measures to Reduce Consumer Ignorance

Thus far we have discussed mainly means to increase price competition. What can be done to reduce consumer ignorance? In view of the role of consumer sovereignty in a free enterprise economy, one might think that efforts to improve consumer knowledge would be hailed by all who believe in free enterprise. Actually there has been considerable, though steadily weakening, opposition to such efforts—largely from advertising interests, some of whom appear to believe that the American way includes the continuing right to exploit consumer ignorance for personal profit.

Despite progress much remains to be done. A relatively uncontroversial proposal is that more information useful in improving the pattern of consumption should be provided in our schools and colleges. Given the complexities of the modern world and the time that must be devoted to consuming intelligently, it seems desirable to provide more understanding as a part of normal education. But aid from this source is likely to be limited; not only are there many other claims on educational time, but, in the nature of the case, general principles of consumption can be of only limited value when the specific products available change rapidly.

Undoubtedly private industry also has a contribution to make by more educational advertising. In fact, private finance companies, which are often called upon to bail out consumers who have gotten into financial difficulties through unwise and ill-timed purchases, have in recent years made notable efforts to educate consumers in the efficient management of their income, and provide such relatively specific information as how to get the most from automotive or appliance dollars. Also important is the vast increase in recent years in "how-to-do-it" publications and in publications giving information, often including critical tests, on new products or new models as they become available.

Perhaps the most effective contribution thus far has come from the work of private nonprofit testing organizations, especially Consumers Union and Consumers' Research. Because their only source of funds is their members, they are free from any sort of commercial pressures, and between them probably reach over 5 percent of American households. It appears that companies watch the ratings accorded their products and many undertake immediate measures to correct deficiencies that have led to low ratings.[5] Clearly such organizations, by making the consumer more willing to try new brands that have met quality standards, have the overall effect of increasing competition and improving product engineering. But, as they would be the first to admit, their budgets are still extremely small—involving less than a thousandth part of what is spent on advertising. A major difficulty they face is the almost complete lack of standards on testing procedures. Here help can perhaps be expected to come, over time, from the government and the industry concerned. Most important in limiting the effectiveness of consumer organizations appears to be the difficulty of providing usable information to those of limited literacy. Consumers Union, in fact, started out to aid those in the lowest income brackets, but now has a readership half of whom have had a college education and whose income is perhaps higher than that of the readers of any other publication with a similar circulation. But this difficulty is likely to be reduced in time by our improving general level of education.

### Government and Consumer Ignorance

Most controversial of all is a possible expansion of government activity. Apart from objecting to harmful products and those promoted by misleading advertising, government generally insists on fair weights and measures. In addition, the federal Bureau of Standards has often been called upon to do product testing, especially in connection with government purchases. Frequently the results have been of aid to business in establishing standards and testing procedures. Often standards are welcomed by an industry if established either by government or by trade associations. The setting of standards, for example, regarding the octane number of gasoline and the volatility of oil has long been recognized as essential by the petroleum industry. But standards and results of Bureau of Standards tests are rarely available in a form useful to the average consumer. The Department of Agriculture has also done much to encourage grade labeling and makes available considerable general information regarding methods of using farm products. Overall, however, the impact on consumer ignorance of the government's activities has thus far been relatively small.

Should the government do more? Perhaps an expansion of the testing work of the Bureau of Standards would be most useful, with an expansion of grade labeling a close second. The latter, of course, would be best if designed to be understandable to the consumer; it would be nice if the smallest olives were not graded "jumbo"! In the case of testing, the results would probably not be directly useful to consumers, for the interpretation of tests will inevitably be a difficult function for government to assume. But the development of appropriate testing procedures and actual performance of the tests might well be undertaken by government.

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[5] Eugene R. Beem and John S. Ewing, *Harvard Business Review,* March–April, 1954.

Should the government go so far as to ban worthless products? The issues raised by such a proposal are well illustrated by a recent hassle over a battery additive. Claimed by its manufacturer to restore and extend the life of batteries, the product was found to be worthless by the Bureau of Standards and, as a result, denied the use of the mails. But, when he heard of the action, the then Secretary of Commerce asked that the ban be removed on the ground that the best judge of a product is not a government bureau but the American consumer! Indeed, the company had received many letters praising the effectiveness of its product —which should not particularly surprise anyone familiar with the number of unsolicited testimonials that are received praising patent medicines (especially those with a high alcoholic content). Ultimately the Federal Trade Commission was so impressed by user testimony that it dismissed the complaint. As a result the producer sued the government for $2,300,000 in damages and launched a $1,000,000 advertising campaign to promote the product as "government tested and proved"!

Under the circumstances it seems likely that *caveat emptor* (let the buyer beware) is likely to remain the rule where the product is merely worthless rather than positively harmful. There clearly are dangers in giving a government bureau the power to ban products, and many may feel that our level of living is so high that waste is preferable to bureaucratic control. The waste involved in worthless or practically worthless products is not insignificant; in Chapter 9 we estimated it at perhaps 1 percent of the national income. But, in the long run, banning products seems almost certain to be considerably less important than the positive approach of providing consumers with the knowledge they need to choose intelligently.

# 15

# Natural Monopolies—Ownership or Regulation?

## Introduction

Adam Smith was prepared to advocate laissez faire because he felt that the natural tendency of businessmen to conspire against the public would be restrained by the forces of competition. But there are situations where competition is impossible and a monopoly inevitable. It obviously makes no sense to have two postal or telephone systems; to provide everyone with two telephones or two mailmen would clearly cost more. As we saw in Chapter 3, this is true, in various degrees, for most transportation companies (including rail, air, bus, and pipe lines) and most local utilities (supplying gas, electricity, and water), which are described as "natural monopolies" by economists and "public utilities" by lawyers.

Actually a case can be made against the use of "natural," as the areas included are not fixed by "nature"; they are, in fact, quite capable of changing as conditions change. For example, inns were among the first enterprises to be regulated under the English common law, for they had a clear monopoly when they were separated from competitors by miles of almost impassable road. But today, with many types of accommodation readily available, we rely on competition to keep hotel prices in line. Again, when the Interstate Commerce Commission started to regulate the railroads, they were the overwhelmingly important means of intercity travel for passengers and freight; today private cars account for most intercity passenger traffic, and even freight traffic is subject to competition from trucks, airlines, pipelines, and waterways. It is an open question as to whether, under the circumstances, railroads are still enough of a natural monopoly to justify continuing rigid regulation.

### Regulation versus Ownership

Where competition is impossible, we may place reliance on private ownership accompanied by public regulation—as in the case of the telephone system or the typical utility company—or outright government ownership—as in the case of the postal system or, more recently, the Tennessee Valley Authority. The basic purpose of this chapter is to examine, from the economic point of view, the relative merits of the two alternatives. There are, of course, other factors that may be taken into account: some may feel that it is politically desirable to keep the role of government as restricted as possible, while others may fear the political repercussions of large aggregates of privately owned wealth. These larger questions will not concern us; we will instead concentrate on the comparatively narrow question of relative economic efficiency.

We shall find that even this relatively narrow question is not easy to answer, because comparisons between public and private operations are by no means easy to make. Let us start by examining in some detail why this is so. Then we will want to consider more carefully what is meant by "economic efficiency," on the basis of which the choice between the two alternatives is to be made.

Both privately owned utilities and the Tennessee Valley Authority (hereafter TVA) generate electricity. Why cannot we choose between them by simply seeing which charges the lowest price per kilowatt-hour? This appears to be what President Roosevelt had in mind when he originally suggested that the TVA would offer a "yardstick" by which to judge the rates charged by private utilities; but "yardsticks" are useful only when they contain the same number of inches. Suppose we compare the costs of the TVA with those of a private utility to see why the number of inches is not necessarily the same.

### Power Costs under the TVA

The TVA claims to be making a "profit" on selling power; an opponent of public power, on the other hand, has estimated that the revenue received by the TVA from the sale of electric power would have to double to cover the necessary costs of a private utility.[1] This does *not* mean that public power is "cheaper"; it simply means that some of the costs that a private utility has to assess against its power sales had not been assessed against power sales when the TVA computed its "profit." Three main items are involved: taxes, interest, and the allocation of the cost of dams. The TVA makes certain payments "in lieu of" taxes (which it cannot be compelled to pay, being a part of the federal government) to localities in the area in which it operates, but such payments are very much lower than the taxes paid by a private utility. Moreover, private utilities are subject to corporate income taxes whereas the TVA is not.[2] Obviously, if as a matter of public policy we ask utilities but not the TVA to pay heavy taxes, we cannot directly compare private utility rates, which under the circumstances will have to be high enough to yield the required tax revenue, with rates that yield little or no such revenue.

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[1] "The Continuing Cost of the TVA" (Washington: United States Chamber of Commerce, 1954). The Chamber is strongly opposed to public power in general and the TVA in particular, so that the estimates may or may not be

Second, there is more risk in lending to a private utility than to the federal government. Hence the interest that a private utility has to pay is considerably higher than that paid by the government, perhaps as much as twice as high. Is such a premium for risk justified in view of the probability that people are going to continue to want electricity? Perhaps not. But little more than thirty years ago it was almost inconceivable that people would ever stop wanting rail transportation and the stock of the Pennsylvania Railroad—the largest in the country—sold for seven times what it is worth today. How can we be certain that a fuel cell in every basement is not in the future going to provide us with all the electricity we want?

Note carefully that the *risk* of a fuel cell rendering obsolete the present investment in power lines, generators, and dams is approximately the same whether the investment is owned by the TVA or a private utility. The difference is that, in the case of private ownership, the risk is borne entirely by those who have invested in the company, whereas in government ownership ultimate responsibility rests on the taxpayers, who would be called upon to make good the agreed payments in the event that the property lost its value. It is, of course, this ability to call on the taxpayers that makes lenders willing to accept a lower return from securities backed by a government promise to pay. The matter, moreover, is further complicated, where ownership is by state or local governments, because the interest paid on state and local bonds is generally exempt from federal income taxes.

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precisely accurate; but they nonetheless illustrate the differences with which we are concerned.

[2] The Chamber of Commerce estimates that overall the TVA paid only 7 percent of the taxes that a private utility would have paid.

Finally, the TVA dams are "multiple-purpose" dams, providing for navigation and flood control as well as power. The TVA appears to have allocated rather more than twice as much of the total dam cost to navigation and flood control as a private utility operating under a license of the Federal Power Commission would have been able to allocate. Overall the Chamber of Commerce concludes that the TVA received $590 million from the sale of power between 1934 and 1952, on which it earned a "profit" of $56 million, which was turned over to the federal Treasury. In contrast, the study estimates that a private utility —in order to cover the higher taxes that would have been assessed against it, its higher costs of borrowing, and the larger portion of the total costs of its dams that it would have had to charge to power generation—would during the same period have needed revenues of $1,195 million. Whether or not these particular estimates are correct, it should be obvious that the "cost" of a kilowatt of public power is not easy to determine.

### Costs under Private Ownership

How about the "cost" of a kilowatt of private power? Surely private firms, especially when subject to regulation, must keep accurate records of their costs. To see how far from the truth this *can* be, let us deliberately take an extreme example. Although drawn mainly from an actual case (involving a telephone company rather than power generation), it can best be thought of as an example of what *can* happen, which will permit simplification without unfairness.

A utility once claimed that the cost of reproduction of its physical plant was $17 million, less depreciation of $1.5 million, giving a net plant value of $15.5 million, on which at 6 percent it was entitled to earn $930,000, but on which it was actually earning only $900,000. After eight years of investigation and litigation and 7,000 pages of testimony, it became clear that, in establishing the cost of reproduction of its physical plant, the company reasoned that it could not sell its services during the five years that it would take to construct the plant and that, therefore, it was entitled to add to its capitalization both interest (at 7.5 percent because it would have been a new and risky business) on the money tied up during the five-year period of construction and an allowance to cover the cost of raising the necessary capital—despite the fact that the company had actually grown slowly and expanded largely out of retained earnings. When these particular hypothetical costs and a variety of related items were disallowed by the regulatory commission, the reproduction cost of the company's property was reduced from $17 million to $12 million.[3]

Next came the question of the degree to which the property had depreciated. Its central equipment had been depreciated for tax purposes at an annual rate of 7 percent for twenty years—involving 140 percent of cost—but the utility claimed that, for rate-making purposes, its value had declined by only $1.5 million. The regulatory commission decided that actual depreciation was $3.5 million, reducing the depreciated value of the company's plant to $8.5 million, and the annual amount it was entitled to earn (at 6 percent) from $930,000 to $510,000.

But earnings are the difference between revenues and expenses. The commission found that revenues had been understated by $450,000 and expenses overstated by $400,000. Revenues were understated because extensive services were performed by the utility for its parent holding company, but all the revenues collected for performing such services were given to the parent holding company. Expenses were overstated in the main because the depreciation being charged was found to be grossly excessive. The net result was that the company was found to be earning, not $900,000 as it claimed, but $1,750,000, or $1,240,000 more than the $510,000 to which it was entitled. Total alleged "costs," including the return on capital, were at the time less than $4 million. It follows that rather more than 30 percent of the company's "costs" were in this case fictitious, which in turn meant that its revenues were 30 percent in excess of those to which it was entitled. Admittedly this is an extreme case, involving a regulatory authority that had previously been grossly inefficient; but it should make clear that private "costs," especially as reported to regulatory authorities, cannot always be taken at their face value and that the mere fact of regulation does not guarantee that the price charged is justified.

Obviously neither the TVA nor the private utility just considered is particularly important in itself. But the problems raised by the difficulty of making cost comparisons are unfortunately much more widespread. For example, no taxes are paid on public roads; but railroads must not only maintain their tracks but also *pay taxes* on the assessed value of the property they own. As a result, it is estimated that railroads have to spend 20 cents out of every dollar they receive to maintain their trackage, whereas trucks pay only 5 cents of every dollar for their use of the highway system. The fact that the *additions* to our highway system authorized by the Highway Act of 1956 are now estimated to cost over 50 percent more than our *total* investment in railroads gives an indication of the magnitude of the misallocation that this difference in treatment involves.

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[3] Some of the reductions in capitalization grew out of the fact that the company had included $300,000 of unused property; had valued tunnels on the basis of 600 bricks per yard when it is physically impossible to lay more than 500 per yard; and had valued the bricks at a price that included delivery and then added 20 percent for delivery.

### The Meaning of Economic Efficiency

If "costs" and "prices" have ambiguous meanings under both public and private ownership, how can we choose between the two alternatives on the basis of their relative economic efficiency? It is possible to establish rather elaborate criteria for determining "ideal" output and "ideal" price. We shall instead offer three relatively simple standards for determining relative efficiency: (1) the closeness of the relationship between factor cost and the price charged for the product or service; (2) present efficiency (in the sense of the minimum use of scarce factors to achieve present results); and (3) the speed of economic development. Let us consider in some detail how both public and private ownership measure up on the basis of these standards.

### Separate Accounting and Resource Allocation

Why have we devoted so much attention to the validity of "costs"? Are they really of such concern to anyone except an accountant? The answer is, of course, that an economy cannot economize efficiently unless it knows the cost, in terms of scarce factors of production, of the alternatives open to it. Recall that, in the discussion in Chapter 6 of how an economy should economize, it was pointed out that an economy is not in balance unless the last packet of factors yields the same social satisfaction in all the alternative uses to which it can be put. We saw that in the competitive area of the economy the price at which each product is offered tends to reflect rather closely the cost of the scarce factors required to produce it. Thus, as a consumer adjusts his spending among alternative products, he is in effect adjusting factor use in the direction of the socially desirable balance. But he can contribute to balance only as the price at which each product is offered to him *reflects the factors embodied in it.* Moreover, even when the government wishes to interfere with consumer sovereignty—as when it decides to spend more on education than consumers would spend voluntarily—it remains essential for the government to know the factor cost of education in order to be able to decide intelligently *how much* education to provide.

Actually the problem with which we are concerned—which involves relating results to their cost in order to achieve the best use of our productive factors—is one that faces all large organizations. We may illustrate by two widely different examples. In 1949 the Military Sea Transport Service (hereafter MSTS) was established as a separate organization serving the Army, the Navy, and the Air Force and ordered to meet its costs of operation by billing for the services that it rendered at prices sufficient to cover its costs. Why go to a lot of bother and bookkeeping when all that was involved was one branch of the government billing other branches? The answer is that, before MSTS, there was no incentive for anyone to worry about ships that were kept waiting or even about eliminating quite unnecessary trips; the costs were not charged against those responsible for the delay or the trip. Under MSTS, on the other hand, costs were charged to the budget of a specific organization. As a result, the cost of delays at dockside was reduced from $47 million to $8 million and the average turn-around time per ship was cut by eight days. Overall it is estimated that MSTS saved over $150 million a year in comparison with previous practices.

Exactly the same problem can occur in a large private organization. During the thirties, for example, the Ford Motor Company was not organized on a divisional basis, despite the fact that the company was at the time manufacturing a wide variety of components, including glass, steel, and tires. With a guaranteed market and no competitive pressure, production of many components became quite inefficient, so that Ford's costs rose well above those of General Motors, which had by then been organized on a divisional basis. One of the first things that Henry Ford II did on taking over at the end of World War II was to introduce a divisional organization.

Even with a divisional organization, precise determination of costs may still be difficult; "overhead costs," for example, can be only rather crudely allocated among divisions by the exercise of accounting judgment. But we are unlikely to go too far wrong if responsibility for a relatively small group of products is given to a division *that is required to be self-sufficient.* And the incentive to organize on a divisional basis—with separate costs and revenues—is strong in organizations being conducted so as to maximize profits, for only in this way is it possible to determine which activities are contributing to, or subtracting from, overall profits. In fact, in many cases a division of a corporation is today allowed to buy from an independent supplier if it can get a better price even when there is another division of the same corporation which makes the same component.

### Separate Accounting and Government Ownership

Under government ownership there is little pressure to organize divisionally or to relate the price charged to factor cost. Instead, a politician is likely to be successful as he maximizes apparent benefits and minimizes apparent costs. He has a considerable incentive, therefore, to approve arrangements that make it hard, if not impossible, to find the true factor cost of providing any particular service. In fact, nothing delights a politician so much as a situation in which the benefits accrue to his constituents but the costs are borne—or at least appear to be borne—by someone else! An example is the New York Transit Authority, which started out as a separate entity with a mandate to cover its costs. But preservation of the fifteen-cent subway fare subsequently became a political necessity. As a result, various costs, ranging from outstanding debt to subway guards, have been assumed by New York City in order to prevent a fare increase; nothing less than an elaborate engineering and accounting study could now answer the question of what it costs to provide a subway ride.

In short, as it does not seem to make much difference out of which public pocket the money comes, accounting is likely to be more confused under public than private ownership. This is in fact likely to be true even when the public operation is set up as an independent public authority free of direct political pressures; it is almost certain to be true when the activity is carried on directly by a politically dominated government department.

### Separate Accounting and Regulated Utilities

To the extent that a regulated utility seeks to maximize its profits, it will be under pressure to operate on a divisional basis and price its products so as to reflect their costs. But this pressure may be thwarted by the way in which regulation takes place. Obviously the first objective of regulation must be the prevention of the gross overstatement of costs that occurred in the case of the telephone company we examined. In that particular case, it was politically impossible to pay the members of the regulatory commission more than was received by the members of the state legislature, and the commissioners in turn were unwilling to pay their rate engineer more than they themselves received. As a result, the rate engineer got for a year's work what the company's chief witness was paid for twenty-five days of testimony! It is hardly surprising that, under the circumstances, able rate engineers tend to end by working for utilities rather than for regulatory commissions. Moreover, the utility advertised widely; the utility commission not at all. It is again hardly surprising that the case received almost no publicity in the press, especially since all the local papers were owned by a single family. Clearly regulation, particularly at the state level, can be nothing more than a built-in and unequal dog fight between a well-heeled utility and an incompetent or grossly underpaid regulatory commission.

On the other hand, many regulatory commissions, as, for example, the Interstate Commerce Commission (hereafter ICC), appear to have been quite effective in preventing excessive earnings on an overall basis. Specifically, the ICC, in what is perhaps its most original contribution, has insisted that railroads keep their accounts in a specified and uniform manner. This in turn has permitted requests for rate changes to be acted upon without extended investigation of such factual matters as the proper valuation of the railroad's property and the return to which it is entitled. There is no doubt that, where the regulatory commission is well paid and well staffed, excessive earnings can be prevented.

But the ICC has been slow in aiding railroads to adjust to changing conditions and its regulation of rates has been sufficiently rigid to interfere seriously with the adjustment of prices to costs. In fairness to the ICC, it is necessary to point out that railroad pricing even before regulation was discriminatory in the sense that freight with a higher value was often charged a higher price. In cases where the railroad would not otherwise have received enough revenue to justify its operation, discrimination of this sort may be desirable from the social point of view; in any event, discrimination was frozen into the rate structure when regulation started. The advent of intercity trucking completely altered the situation, for trucks are often able to quote rates for valuable cargo below the posted rates of the railroads. But under ICC rules railroads are not allowed to lower their rates to meet truck competition, on the ground that changing the existing (admittedly discriminatory) pattern of rates represents "discrimination" and therefore "unfair competition"! The result is that trucks today move freight that could be moved more cheaply (in terms of the scarce factors required) by rail and on which the railroads could make a good profit at or below the price charged by trucks! Thus the usual tendency of a privately owned organization subject to competitive pressures to adjust price so as to reflect factor costs has, in the case of the railroads, been frustrated by the inefficiency of the regulatory process.

In short, there is in general likely to be a somewhat closer correspondence between price and factor cost when the utility is privately owned. But this will obviously not be true if inefficient regulation either permits excessive overall profits or prevents, for some reason or other, prices from being adjusted to costs.

### Ownership and Present Efficiency

Is public or private ownership more likely to operate with the best available technology and therefore the minimum use of scarce factors? Any number of specific examples can be cited in favor of each alternative; it is by no means clear which would be favored by the balance of professional opinion. The presumption appears to be in favor of private ownership, for the larger profits that are at least temporarily available as a result of increased efficiency (until the regulatory commission gets around to lowering rates) should provide a stronger incentive to eliminate waste than exists when no one directly benefits from more efficient use of resources.

Obviously this presumed superiority of private ownership will be realized in practice only where regulatory commissions and the judiciary are both *reasonably effective and reasonably free from corruption.* For, if inefficient regulation results in excessive profits, it is likely to divert management's efforts from improving efficiency to devising ways of achieving rate increases—or, perhaps, merely to enjoying a "quiet life"! Unfortunately at the present time there are many regulatory commissions even at the federal level that are not particularly efficient and some that are not free of at least minor corruption. As for intrastate regulation, there may well be instances where regulation is no more efficient than it was in the case we examined. Again, although it appears to be true that there is little corruption in the federal judiciary, this cannot be said of judges at the state and local levels. Moreover, when the private alternative is considered for underdeveloped areas, it is essential to keep in mind that the judiciary in such areas may be entirely lacking in integrity. Nor does the absence of a profit incentive necessarily prevent highly efficient operations by publicly owned organizations, especially where they are separately organized so as to be free of routine political pressures and in a position to pay salaries that will attract executives of ability. The record of public authorities, especially on the engineering side, has frequently been the equal of private utilities.

### Ownership and Economic Development

Although present efficiency depends primarily on the use of the best available technology, rapid economic development depends heavily on improvements in technology. Which alternative is likely to achieve more rapid improvements? On three counts it appears that greater speed is likely under private ownership. First, there is once again the fact that, if ways to reduce costs are developed under private ownership, there is almost certain to be a time lag before a regulatory commission gets around to reducing prices. The resulting temporarily excessive profit should provide a strong incentive for invention and innovation—just as do abnormal profits in competitive areas, even though they also are likely to be no more than temporary because of the expansion of output that they themselves can be expected to induce. Second, it seems likely that private utilities generally place somewhat greater stress on good service than do public authorities, and that, in general, efforts to improve service are more likely to lead to relatively rapid innovation than efforts to provide existing services at a lower price.

Finally, and perhaps most important of all, it seems likely that expenditures for research and development can be more readily incurred by a private utility than by a public authority. As before, the case is not completely clear. First-rate research has been done by the TVA, for example; and, if the Post Office has done little or no research, neither has Western Union. But no research designed to improve the technology of any publicly owned operation begins to compare with the achievements of the Bell Telephone Laboratories. On balance it appears probable that more rapid economic development is likely under private ownership.

### The Use of Competition

Does this make a shift toward more private ownership desirable? Not necessarily. There is much to be said for continuing competition between the public and private alternatives. Although TVA did not provide a "yardstick," there is little doubt, for example, that competition from it, and more generally from the Rural Electrification Administration (hereafter REA), put pressure on private utilities to experiment and innovate. Provision of power to rural areas has an immense social impact: power makes possible running water, an indoor flush toilet, and modern appliances. Before the REA, private utilities were in general unwilling to build rural lines unless they were guaranteed an immediate return on their investment. Cooperatives of REA sometimes have generated their own power, but more generally they have bought it wholesale from private utilities. Some of the reductions in costs they achieved were the result of lower taxes and lower interest costs, but they also developed, by imaginative engineering, less expensive ways of transmitting power. In a remarkable number of cases the upshot was that, as soon as REA cooperatives started operating in an area, private utilities suddenly found that they could supply power profitably to rural customers—and at rates far lower than they had ever before quoted! A judicious use of competition between public and private ownership appears especially desirable when there are good prospects for innovation. Admittedly natural monopolies are, more or less by definition, situations where competition involves waste. But if competition also achieves more rapid development, some, all, or more than all of the waste may be offset by the more rapid development.

## Some Tentative Conclusions

On balance it appears that there is a presumption in favor of private ownership of natural monopolies; but the presumption exists only where there is effective regulation. To strengthen the presumption, our regulatory and judicial procedures need to be strengthened, particularly at the state and local level, and at the same time made more flexible. Even the Interstate Commerce Commission, although undoubtedly highly effective in regulating overall profits, has been less than helpful in promoting adjustments between costs and prices or in aiding the railroads to adapt themselves to changing conditions. A greater recognition of the importance of keeping separate books for public authorities and of isolating authorities from political pressures is also urgently needed, and it is essential that talent in public authorities receive compensation broadly comparable to that in equivalent private employment. Finally, the importance of both present efficiency and innovation over time needs to be emphasized.

In actual practice the choice between public and private ownership is likely to depend on a comparison of the probable effectiveness of regulation with the probable efficiency of a public authority in a *particular set of concrete circumstances,* with the balance doubtless shifting from time to time. As a result, even at the risk of some waste from duplication, there is much to be said for the use of a certain amount of judicious competition between the two alternatives. It is definitely not an area of the economy where simple and clear-cut solutions are possible.

# PART III How the Results of Production Are Distributed

## 16 Functional Distribution—Labor

### Distribution and Money Income

We have now seen the way in which production objectives are established and goods and services produced in response to these objectives. How are these goods and services "distributed"—shared out among those responsible for their production? Note that it is this *sharing out of production* that economists generally mean by "distribution"—not the process by which manufactured goods are made available at retail to ultimate purchasers. Actually, to an economist, distribution in the latter sense is part of "production," for production includes everything that increases the value of goods and services to ultimate purchasers, whether or not materials are physically transformed (as they are in most manufacturing processes) or merely made more readily available without a change in their physical form (as they are by most wholesaling and retailing). Here once again the economic meaning of a term differs from its meaning in ordinary speech. In short, our problem is how the goods and services produced during any period are distributed among the factors responsible for their production.

One way of distributing goods would be for a central authority to hand out slips entitling a person to two pairs of shoes, three handkerchiefs, and four books—as the Office of Price Administration did for sugar and shoes during the war. Actually no type of economic system normally operates in this fashion. Instead, the consumer is given *generalized claims* to goods and services in the form of *money income.* The great virtue of this system in a world where goods and services—and tastes and wants—take many forms is that it permits consumers to allocate their claims among alternatives in such a way as to maximize the satisfaction that the claims can provide.

Concretely, this means that, if two handkerchiefs, three pairs of shoes, and four books are the average quantity available, a consumer who loves to walk but not to read may obtain four pairs of shoes and two books, while another who loves to read but not to walk may receive two pairs of shoes and six books. Moreover, providing consumers with generalized claims to goods and services in the form of money income permits them not only to choose freely among the many goods and services made available by past production but also to establish objectives for future production. In the discussion that follows, therefore, we shall be mainly concerned with the way in which *money income* is distributed, for it is this that mainly determines the goods and services a person receives in any period.

## The Pricing of Output

Distributing output involves more, however, than distributing money income; the goods and services that are available must also have prices attached to them. Under free enterprise the prices that are set tend to reflect the *amount of the scarce factors of production that are embodied in goods and services.* This is basically true because goods will not be produced unless the prices at which they can be sold cover their cost of production (including normal profits). It is not, of course, always true in the short run, when losses may indicate that a good is offered at less than the cost of the factors embodied in it or profits may indicate that the price is higher than factor cost (including normal profits) because production has not had time to increase in an area where demand is expanding. But, in usual situations, mobility of productive factors severely limits both profits and losses and keeps prices of goods closely related to the cost of the scarce factors whose productive services the goods embody.[1] Thus, under free enterprise, when an income recipient chooses that combination of goods which maximizes the satisfaction he obtains from his income, so long as the goods are priced to reflect their factor cost, he is also choosing the best combination of uses of the factors of production to whose services his income entitles him.

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[1] To the extent that there is monopoly in the economy, prices may be in excess of costs even in the long run. But Chapter 12 suggested that monopoly profits—and, therefore, long-run divergences between price and cost—are today relatively limited in amount.

Note that, during wartime, prices are least likely to reflect factor cost, for during such periods *specific shortages* develop that cannot be eliminated, within the time available, by a transfer of factors from other areas of the economy. The goods involved, because they are in especially short supply, are likely to be subjected to *specific rationing.* But the Office of Price Administration, when it undertook to ration canned goods, did not simply divide a given number of cans of spinach, carrots, and peas by the number of consumers. Instead, even for as limited an area of consumption as canned goods, it issued generalized claims in the form of blue points so as to increase consumer satisfaction by allowing choice among the available kinds of especially scarce canned goods. As a result, those who disliked spinach were not forced to eat it. Note, however, that prices in terms of blue points were set, not to reflect the amount of scarce factors embodied in the goods, but rather in relation to the *specific prevailing shortages* that there was insufficient time to remedy.

To summarize, during normal times giving consumers generalized claims in the form of money income, and pricing goods in terms of their factor cost tend to maximize the satisfaction consumers receive from the goods and services that can be produced with the quantity of scarce factors to which their income entitles them—provided that *money income is properly distributed among the factors of production.*

## Aspects of Income Distribution

Income distribution has two aspects: we may study how income is distributed among the factors of production (land, labor, and capital), which is called the *functional* distribution of income, or we may study the way in which income is distributed among people without regard to the functions they perform, which is called the *personal* distribution of income. We shall devote this and the two chapters that follow to functional distribution, and Chapters 19 and 20 to a discussion of personal distribution. Because land, labor, and capital are in some respects different, we shall discuss each factor separately, starting in this chapter with labor.

Our present concern, then, is this: What determines the way in which money income is distributed to labor, defined in the broadest possible sense of the term? The *immediate* answer is that laborers receive as income what they can induce an entrepreneur to pay for the services they perform. But what determines what an entrepreneur will pay? To answer

"Supply and demand" is not particularly enlightening, but it does give us a basis for grouping the influences that are at work. Let us look at demand first.

### The Physical Product of Labor

At any time an entrepreneur is likely to have some idea of how much one more worker would add to, and how much one less worker would subtract from, production. How *good* an idea an entrepreneur is likely to have of the physical product of an individual worker is another matter. In certain circumstances it may be very good. If a farmer has an unused scythe and a hayfield to be mowed, at the end of a day during which he employed a migrant worker he will know quite accurately just how much the man produced. But in a great many cases it is not possible to attribute production to a particular worker: to fly an airplane may require hiring at least a pilot, a copilot, and a stewardess, whereas opening up a production line may involve hiring hundreds of workers. This does not invalidate the concept, as we can treat the output in question as the *joint product* of the workers who must be hired together. But it does mean that the way in which income is distributed among the members of such a group is essentially arbitrary.

More important, a man's output depends on other things *remaining constant*—or, as the economist likes to put it, "equal." Specifically, this means that the physical product of a worker depends on the *amount of capital and land he has to work with* and the *technology that is in use.* From day to day these do not change significantly: our migrant worker is likely to produce about the same on Tuesday as he produced on Monday. But, if he were to come back a year later, the farmer might have a mowing machine. Moreover, even if we rule out technical change, it is open to the farmer to *substitute* one factor for another: by providing a better scythe embodying more capital, for example, the farmer may reduce the time that the worker has to devote to sharpening the blade.

By specifying which variables are to be kept constant, a number of relationships can be established; for those interested, a more formal treatment of such relationships is presented in Appendix B. Here we shall simply outline in general terms what is involved. Suppose we start by holding capital and land, as well as technology, constant and measure the output produced by additional workers. This is our case of the farmer with a given field and given scythes employing additional migrants. The resulting relationship obviously applies only in the short run; it gives what may be described as labor's *short-run marginal physical productivity schedule*—the change in the total physical product as additional workers are employed with *given amounts of capital and land.*

Now suppose we allow capital and land to vary and hold only technology constant. This still rules out replacing the scythe with a mowing machine, but it does allow the farmer to get a more (or less) expensive scythe and also a larger (or smaller) hayfield. Suppose, further, that entrepreneurs know the prices they would have to pay to obtain additional quantities of capital and land. Then it is possible to measure the output produced by additional workers on the assumption that each amount of output is produced by that combination of land, labor, and capital which has the *smallest total cost*—the so-called least cost combination. In other words, what we are allowing in this case is *full substitution* among the factors of production, so that each output is produced at the lowest possible total cost. This sort of relationship obviously only applies in the long run, and gives us labor's *long-run marginal physical productivity schedule*—the change in total physical product as additional workers are employed when the additional workers work with those *amounts of capital and land which are best in the light of available technology*. Note once more that our analysis is based on no changes in technology even in the "long run."

### The Revenue Product of Labor

Unfortunately even these schedules do not tell us what the farmer would be willing to pay the migrant worker. For, in addition to the amount of product labor can be expected to produce, the farmer must also take into account the *revenue* he can derive from selling the product. Here there are two possibilities. One is that the demand for hay is perfectly elastic, as illustrated in Figure 10-3. As we have seen, the basic characteristic of such a situation is that, over the range with which we are concerned, *any quantity* can be sold at the *prevailing price*. In other words, over this range, *average and marginal revenue are the same*. Where such a situation prevails, the farmer's task is relatively simple. All he has to do is to multiply the various amounts of product shown on the appropriate marginal physical productivity schedule by the prevailing price to obtain labor's *marginal revenue productivity schedule*, which gives the *market value of the output produced by each additional worker*.

Where the demand for hay is not perfectly elastic—in other words, in almost all cases that entrepreneurs actually face—it is marginal, rather than average, revenue that must be used to transform the appropriate marginal physical productivity schedule into a marginal revenue productivity schedule. Differences between marginal and average revenue were discussed in some detail in connection with Table 10-2. But, in a nutshell, the distinction means that the farmer, in deciding whether or not to hire the migrant worker, must take into account the reduction in price necessary to sell what the additional worker will produce.

Suppose that in any given labor market all the employers have worked out both short-run and long-run marginal revenue productivity schedules for labor, giving in each case the revenue product to be expected from employing different quantities of labor. From these can be constructed both short-run and long-run demand curves for labor, as each entrepreneur—at least under competitive conditions—will be willing to pay for additional workers anything up to their marginal revenue product. It is, in short, marginal revenue productivity that determines the demand for labor.

## The Supply of Labor

Now let us turn to the supply of labor. Three main factors influence the supply of labor: abilities, training costs, and preferences. In addition, the labor market is marked by a considerable variety of imperfections. Let us start by disregarding the imperfections. Where abilities differ, one would expect greater ability to receive larger compensation. But compensation need not be directly related to differences in ability, for measurable abilities are usually distributed "normally" in the sense that the number above the average is about the same as the number below the average, while the distribution of income is "skewed" in the sense that two thirds of all income recipients receive less than the average and only one third more than the average. Why should a man who is perhaps 50 percent better than the average receive an income that is perhaps three times larger than the average? What is involved can be illustrated by pointing out that people may be willing to pay little or nothing to see an average prize fighter, but a great deal to see a man who is statistically only a little bit better but who happens to be the world champion. Again, the longer the period of training required for any job, the higher in general is likely to be the compensation received in order to repay training costs. In the case of both abilities and training, therefore, the correlation with compensation is likely to be straightforward: workers with greater abilities and greater training can be expected to offer their services only in return for higher compensation.

It is the influence of preferences that greatly complicates matters, for, once preferences are allowed to enter the picture, it no longer follows that labor necessarily seeks the highest possible wage. Even in the case of capital, whose service can be performed while the owner is absent, a man may take a lower return to be known as the possessor of a brokerage firm rather than of a night club or a gambling house. But particularly in the case of labor, where the owner must be present when the service is performed, there are obviously many instances where the work required to receive the highest possible money wage is so distasteful as to induce an individual to accept lower pay in order to obtain more congenial employment. For example, the lifetime earnings of college graduates and those who did not go to college have sometimes been compared to measure the return a college graduate receives on the sums invested in him in permitting him to go to college. But one group of college graduates—those engaged in college teaching—may well over their lifetime earn no more than high school graduates who never went to college. The fact is that college graduates engaged in college teaching are indulging their preference for teaching, often at a considerable reduction in money income.

Finally, the labor market suffers from all sorts of imperfections—defined as divergences between the actual wage and a wage determined by market supply and demand along the lines just described. The imperfections involved range from plain ignorance of available alternatives to systematic discrimination against minority groups. By putting inferior people in superior positions and superior people in inferior positions, discrimination involves an immense misallocation and waste of talent. The whole matter is one that deserves more attention than it can receive here or than it has yet received from economists. Again, though scholarships, loans, and low-cost public education are helping, many still cannot afford to incur the training costs necessary to achieve positions for which they are well qualified by ability. Above all, people do not lightly change jobs in a world marked by periodic unemployment; even academic economists, who believe strongly in the social benefits of labor mobility, rarely oppose the tenure arrangements of educational institutions that significantly reduce the mobility of academic economists! In short, for a great many reasons, the labor market is perhaps the least perfect of any major market in our economy.

### The Wage That Labor Receives

Disregarding such imperfections, we can think of a family of supply curves, applying to particular firms, particular industries, or even the economy as a whole and giving in each case the quantity of labor that will be supplied at various wages. We may also think of a comparable family of demand curves (derived in each case from appropriate revenue productivity curves), applying to particular firms, particular industries, or the economy as a whole and giving in each case the quantity of labor that will be demanded at various wages. The wage that labor receives is, of course, determined by the point of intersection of the relevant supply and demand curves in each market.

### Limitations of Marginal Productivity Analysis

How significant is the marginal productivity analysis we have just summarized? If one attempts to apply it *with precision,* it is obviously deficient, if only because a businessman is likely to be much too busy to attempt very precise adjustments. In a dynamic world, for example, technology is continually changing. Hence, though it is analytically relatively easy to talk of a long-run productivity curve based on the least cost combination of land, labor, and capital using *known* technology, in actual practice the results of different combinations may well not be known until they have been tried. In addition, to help him decide whether to add or subtract capital and land, a businessman would have to equip himself with a set of physical productivity curves for both capital and land equivalent to those we have just discussed for labor. And, in order to translate physical productivity into revenue productivity, it is necessary to know the marginal revenue that may in the future be obtained from the sale of additional output. All in all, as businessmen have quite a few other things they must do and must occasionally even find time to sleep, it seems likely that in actual practice the adjustment between marginal revenue product and the wage paid is not always precise.

In fact, from time to time, economists, carried away by the apparent logic of their analysis, have argued that the imposition by law of a minimum wage would inevitably lead to the unemployment of all those whose marginal revenue product was below the legal minimum. Yet, when the economists' advice has been disregarded and a minimum wage imposed, subsequent studies have in almost all cases shown that actual unemployment was quite small. This does not mean that the analysis is wrong or that a major change in the legal minimum would be possible without repercussions on employment. Rather, it means that certain things that the economists assumed would be constant, in fact refused to stay put. For example, the productivity of the workers may have been increased by the higher wage—because of better food or greater incentive—or the entrepreneur may have either developed improved technology or introduced technology that, though available, he had not bothered to utilize. Or the demand for the ultimate product may turn out to be quite inelastic, in which case most of the wage increase may be passed on to the consumer in the form of higher prices with little reduction of sales or employment. In short, applications of marginal productivity analysis to a particular problem such as the desirability of minimum wages are not easy.

### Value of the Analysis

Does this mean that the analysis has little or no value? Definitely not. For businessmen are always, in the pursuit of additional profits, considering whether to drop one, or undertake another, operation. Rarely in the modern world is the decision likely to be made in terms of single laborers along the smooth productivity curve used in economic analysis. But, however crude the basis for the decision, it is the cost of an operation compared with its revenue product that determines whether it will be undertaken or dropped. So long as such decisions are continuously being made, no major divergence between revenue product and actual wage is likely.

In addition, the analysis makes clear that an entrepreneur's demand for labor is a *derived demand,* which depends ultimately on consumer acceptance of the product the labor is being hired to produce. One reason why a prize fighter may receive $500,000 and a preacher $5,000 is that, for better or worse, far more consumers are willing to pay to see the fighter than to hear the preacher. In short, distribution of money income reflects, to a major extent, the influence of consumer sovereignty.

Finally, our analysis helps to clarify the role of supply. The influence of ability and training, we have seen, is relatively straightforward; greater ability and greater training are only likely to be supplied in return for a higher compensation. But preferences complicate the matter. It seems likely, for example, that more ability and training are required to paint pictures than to paint houses. But, despite the difference, earnings of picture painters are usually lower than those of house painters simply because more people want to paint pictures than houses!

Viewed broadly, then, as a summary of basic influences on wage determination, marginal productivity analysis is clearly of value, despite the real difficulties that must be faced when attempts are made to apply it with precision to particular cases. What it suggests, in short, is that, if we disregard market imperfections and the possibility of permanent monopoly, there is a general tendency for each factor of production to be paid a sum equal to the value of *its economic contribution to current production.*

### The Logic of Payment According to Economic Contribution

Thus far we have been discussing *how* it is that a man gets paid under free enterprise. Suppose we now change our frame of reference and consider, from the social point of view, what sense it makes to pay a man according to his economic contribution. Certainly a man's economic contribution is not necessarily the same as his social contribution. Even if their earnings are identical, a man who devotes his leisure time to good works will generally be held to "contribute" more than a man who devotes his spare time to playing pool. And many would hold that a preacher making $5,000 "contributes" more than a prize fighter making $500,000. On the other hand, there are those who feel that a man has in some fundamental sense an inalienable right to the value of his economic contribution. Although the matter is clearly controversial, it seems best to treat the distribution of income on the basis of economic contribution as not *a matter of right* or *ideal* but rather as a *social arrangement* with many practical advantages.

The basically social character of the matter can be shown by pointing out that, without certain other accompanying social arrangements, payment on the basis of economic contribution would almost certainly be unacceptable. It must be accompanied, for example, by a family system similar to that currently prevailing under which most men marry, have children, and accept an obligation to support their wives and children. For most women clearly engage in activities that are socially useful even if not sold on the market, and must in some way or other be provided with goods and services. Again, market determination of income became general in a period in which children were produced in such abundance as to give rise to Malthusian fears of overpopulation. Wherever changed conditions have raised questions as to whether the population would be maintained, "family allowances" or similar arrangements have been introduced, which cause a man's receipts to reflect his production of children as well as his production of goods and services.

In addition, interferences with payment according to economic contribution—which presumably reflect reservations about at least the full-fledged operation of such a system of payments—are quite widespread at the present time. Undoubtedly the most important is the systematic reduction of the range of payments based on economic contribution resulting from our increasing use of progressive income taxation. At the other end of the scale is the growing importance of social security payments, which provide the aged, the unemployed, and those incapable of working, with claims for goods and services to which they would not otherwise be entitled.

Payment on the basis of economic contribution may also conflict with our desire for security and appropriate respect for our elders. Where lifetime salary arrangements are consciously determined—as, for example, in the armed forces or in public school teaching—compensation increases with the passage of time and in no case declines; it is quite unlikely that a man's economic contribution behaves in even a remotely similar fashion. Nor are profit-making organizations exempt from the trend. Large organizations are extremely reluctant to drop employees—from stenographers to vice-presidents—even though their productivity has declined drastically. And assignment of railroad routes on the basis of seniority may well ensure that an engineer does not run a fast train until he reaches an age at which he is least qualified to do so! In short, judged by the number of ways in which we interfere with the distribution of income on the basis of economic contribution, it seems clear that our society treats the arrangement as by no means ideal.

### Economic Contribution and the Allocation of Labor

What are the practical advantages achieved by distribution according to economic contribution? Two are perhaps most important: payment according to contribution serves both *to allocate available labor among available jobs* and *to maximize the effectiveness of the available labor supply.*

Allocation of available labor is, of course, only one aspect of the overall problem of resource allocation with which this entire section is concerned. We start with a variety of jobs and a variety of people. How can the two be fitted together when there is no reason to believe that the jobs people want will coincide with the jobs available as a result of the goods and services people want? In addition to painting portraits, many find writing novels a desirable occupation, while relatively few find garbage removal intriguing. But, if many wish to write and few to remove garbage, competition between writers will reduce the value of their services until those whose desire to write is relatively weak turn, perhaps, to preparing advertising copy, whereas competition among those wanting garbage collected will increase the earnings offered collectors until some truck drivers with a relatively weak desire to drive trucks are drawn into garbage removal.

Note the adjustment works in both directions. If labor as a whole has a distaste for collecting garbage, the cost of labor—and therefore the price that entrepreneurs charge for the service—will be relatively high. The result will be that consumers will tend to demand less garbage collection and more of the things for which labor has a preference. Hence, where labor is paid its economic contribution, changes in *both* the allocation of labor *and* in consumer spending tend to bring about acceptable results without the use of compulsion and with the largest possible regard for the job preferences of the labor force. Obviously, as we saw in connection with minimum wages, *small* interferences with the wages paid according to contribution are likely to be possible without giving rise to significant problems. But any *major* effort to redistribute income by altering the competitive level of wages—for example, a law which stated that anyone who wanted to write novels would be guaranteed the same earnings as anyone willing to collect garbage—will inevitably lead to a plethora of novelists and a dearth of garbage collectors.

An alternative to voluntary labor allocation would be to subject everyone to a battery of classification tests and then assign each person a job on the basis of the test results. This is in essence the system used by the armed forces; those subject to it are rarely impressed with its achievements! In connection with the armed forces and in wartime there are reasons, similar to those we considered in connection with wartime rationing, that may justify the use of compulsion in allocating labor. But at other times even the Soviet Union has come to place major reliance on differences in money wages as an allocating device rather than the use of compulsion through "labor direction." As the Soviet Union is not in principle averse to compulsion, its use of incentives would appear to be a tribute to the *superior efficiency* of a system of voluntary allocation.

### Economic Contribution and the Effectiveness of Labor

Undoubtedly an important reason for the Soviet decision is the extent to which a system of voluntary allocation contributes to labor effectiveness. We have thus far treated the supply of labor as if it were fixed. In terms of man-hours this may be relatively true for those in the labor force. But the number of women who work and the age at which men enter and retire are not fixed; and, under the impact of war, even man-hours can be increased remarkably. Moreover, and most important, if account is taken of the *effectiveness* with which labor works, it is obvious that the supply, measured in terms of some sort of "efficiency units," is subject to wide variation. Thus the second practical reason for paying according to market value is that this method of payment tends to provide labor with an incentive for being as effective as possible; for the greater the effectiveness of labor, the more it will receive.

Is it necessary to provide labor with a monetary incentive to induce it to put forward maximum effectiveness? Will not the "instinct of workmanship"—or joy in a job well done—ensure that people work as efficiently as they can? For some people this may be true; but overall, except for short periods during wars or similar periods, it seems quite unlikely. A great many of the jobs that have to be done in any economy either do not provide much in the way of creative satisfactions or have to be done by people with little capacity for enjoying such satisfactions. Once again striking evidence in support of this conclusion is provided by the Soviet Union. For the Communist regime, with all the advantages of revolutionary fervor, attempted at the start to work out techniques that would allow income to be distributed on the basis of need. But, as soon as large-scale industrialization began, the efforts were entirely abandoned, and distribution now takes place primarily on the basis of contribution to production. The Russian experience will be examined in greater detail in Chapter 20 in connection with the discussion of the desirable degree of income inequality. But, in brief, the present basis of payments appears little different from that which prevails under free enterprise—though the Communist may deny the similarity on the ground that free enterprise gives capital a return it does not deserve, thereby enabling it to "exploit" labor. This charge we shall examine in the chapter that follows.

# Appendix B

# PRODUCTION THEORY AND MARGINAL PRODUCTIVITY ANALYSIS

## Methods of Production

This appendix explores in greater detail some aspects of production theory and marginal productivity analysis that were summarized in the text. We shall be particularly concerned with the manner in which the firm decides upon the "factor mix" to be used to produce various outputs. This problem arises because a given output can in most cases be produced in various ways. A farmer, for example, can produce by using large quantities of labor and little land—as he would in Japan—or by cultivating a large area of land with the help of much capital and little labor—as he would in Nebraska. Likewise, a building contractor can dig a foundation for a house by employing lots of laborers armed with shovels, or by relying on a few workers equipped with power shovels and bulldozers. This ability to produce a given output in a variety of ways arises out of the fact that productive inputs are often substitutes as well as complements for each other. Thus a worker complements a shovel but at the same time a bulldozer is a good substitute for many workers equipped with shovels. Given these complementary and substitutable relationships, firms are normally faced with the necessity of selecting one from among many technically feasible methods of production.

## The Laws of Production

In Chapter 11 the short run was defined as a period of time during which plant and equipment are fixed (although output can be varied).

In the long run, on the other hand, the firm is capable of varying all factor inputs. The laws of production cover the behavior of output in both circumstances. In the short run it is the law of diminishing returns (sometimes known as the law of variable proportions) that applies, whereas in the long run the behavior of production is governed by economies and diseconomies of scale. Let us start by considering diminishing returns.

### The Law of Diminishing Returns

The law of diminishing returns is a short-run phenomenon because it assumes that at least one factor is held constant; it explains the behavior of the short-run marginal physical productivity schedule discussed in the text. The law refers to the tendency for the increase in total product to *diminish* as larger quantities of a variable factor are combined with the fixed factor. Table B-1, illustrating the law of diminishing returns, disregards capital and shows the product that results when varying quantities of labor are applied to a fixed quantity of land.

TABLE B-1

Output Produced by Various Amounts of Labor

| Units of Labor (1) | Total Physical Product (2) | Average Physical Product (3) | Marginal Physical Product (4) | Price of Product (In dollars) (5) | Marginal Revenue Product (In dollars) (6) |
|---|---|---|---|---|---|
| 1 | 100 | 100 | — | 2 | — |
| 2 | 220 | 110 | 120 | 2 | 240 |
| 3 | 360 | 120 | 140 | 2 | 280 |
| 4 | 492 | 123 | 132 | 2 | 264 |
| 5 | 570 | 114 | 78 | 2 | 156 |
| 6 | 618 | 103 | 48 | 2 | 96 |
| 7 | 651 | 93 | 33 | 2 | 66 |
| 8 | 672 | 84 | 21 | 2 | 42 |
| 9 | 684 | 76 | 12 | 2 | 24 |
| 10 | 660 | 66 | −24 | 2 | −48 |

Column 4 shows the marginal physical product of labor, which is the increase in total product due to the employment of an additional unit of labor. Note that, when very few units of labor are employed, employment of an additional unit leads to an increase in labor's marginal product. Beyond a point, however, further additions of labor result in a smaller marginal product; in Table B-1 this occurs after three units of labor are employed. This is the point at which the marginal product starts to diminish. Column 3 gives the average physical product per worker, which is the total physical product divided by the number of units of labor employed. Note that it, too, rises to a maximum and then diminishes; but the point of maximum average physical product comes when four (rather than three) units of labor are employed. Note, finally, that the total physical product in column 2 rises over most of the range, but a point is reached (with the employment of a tenth unit) where the total product declines. As is elaborated in Chapter 34 in connection with economic rent, this means that the product that can be obtained from the fixed quantity of land is at a maximum when nine units of labor are employed; the tenth man *does more harm than good.* Although production is rarely carried to the point of maximum total product in developed economies, it does explain why there is unemployment in agricultural areas of underdeveloped countries. For there is a point beyond which additional labor is worse than useless and, therefore, is not utilized no matter how low its wage may fall.

The law of diminishing returns is obviously valid only if technology is held constant. Constant technology, however, does not mean that *specific methods* may not change. The marginal productivity concept would not be significant unless the way in which the variable factors are combined with the fixed factor is capable of some degree of adaptation. To cite a classic example, the method of production must be altered if an eleventh man is added to a ditchdigging crew that previously consisted of ten men equipped with ten shovels. Various adaptations can be made. One possibility is to replace the ten shovels with eleven slightly inferior ones costing the same amount. In this case, the value of capital is held constant although the form this capital assumes is permitted to vary. Another possibility is to use the eleventh man to spell off the others for brief periods, thereby increasing their efficiency. Or, he may be used, as Sir Dennis Robertson has suggested, to fetch beer for the others! Obviously, some adaptation in the method of production must occur if the labor of the eleventh man is to be used effectively. But, so long as the adaptation was *known beforehand* as the best way of utilizing the labor of an eleventh man, it does not involve a change in technology.

### Demand for a Factor of Production in the Short Run

The revenue a firm receives from an additional unit of labor can be derived by multiplying labor's marginal physical product by the increase in the firm's revenue due to the sale of the additional output, which gives us labor's marginal revenue product; when this is done for various amounts of labor, we have a schedule of labor's marginal revenue productivity. Where the firm is operating under perfect competition, the price at which an additional unit of output is sold is, of course, also the amount by which the firm's revenue increases as a result of the sale of the additional unit (as marginal revenue is in this case equal to average revenue or price). Columns 5 and 6 of Table B-1 illustrate the derivation of marginal revenue product under such circumstances.

So long as a firm seeks to maximize its profit, the marginal revenue productivity schedule of the variable factor constitutes the firm's demand for that factor. Assume, for example, that a unit of labor costs $96 and the product price is $2. Given the marginal revenue productivity schedule shown in column 6, it would obviously pay the firm to hire, say, a fourth unit of labor, as the marginal revenue product of the fourth unit is $264, so that hiring this unit would bring the firm an added $264 while costing only $96. By this logic it would pay the firm to hire additional units of labor up to the point where labor's marginal revenue product is equal to its wage—or, in this case, six units of labor. Should the firm hire a seventh unit, its profit would be reduced. Hence the firm is prepared to pay labor in any situation its marginal revenue product, so that the firm's marginal revenue productivity schedule is, in effect, its demand schedule for labor.

The analysis is not fundamentally altered under imperfect competition. When the firm is operating in an imperfectly competitive product market (but a perfectly competitive factor market), the marginal revenue product schedule of labor is derived by multiplying its marginal physical product by marginal revenue rather than price—for the reasons made clear in Chapter 10. Multiplying a factor's marginal physical product by price when the firm is faced with a downward sloping demand curve would measure the *market value* of the factor's output but not its *contribution to revenue* received by the firm.

A similar adjustment must be made when the firm is operating in an imperfectly competitive factor market, for it can no longer be assumed that the price of the factor of production is unaffected by the firm's operations. In other words, an increase in the firm's demand for a factor may lead to an increase in factor prices, so that the firm has to pay more not only for the additional factors it employs but also for the factors it previously employed at lower prices. The increase in the firm's cost due to the employment of an additional factor is thus *greater* than the price of the additional factor. The firm will thus maximize its profits when it hires factors up to the point where the *marginal revenue productivity* of an additional factor is equal to the *marginal cost* of hiring the additional unit. As the supply curve is rising, the marginal cost of hiring an additional unit will exceed the wage that must be paid for it. Hence the marginal revenue product of a factor in an imperfectly competitive factor market may exceed the wage it receives by an amount that depends on the elasticity of the supply curve of the factor in question.

### Economies of Scale

In the long run all inputs are capable of complete variation. Under these circumstances, how does output react? This problem was discussed in Chapter 11 in connection with the behavior of costs in the long run. A somewhat more formal statement of what is involved will be useful at this point. Let us start with the simplest possibility—not previously considered—which is that, if all inputs are varied proportionately, output will also vary proportionately. This means that, if one unit of capital combined with one unit of labor is capable of producing 70 units of output, two units of capital combined with two units of labor will yield 140 units of output. When this occurs, economists refer to it as a case of *constant returns to scale.* Although constant returns to scale may occur over a considerable range—involving constant costs over the range in question—there is no reason to believe that this situation applies generally. An increase in the scale of operation may permit the firm to use superior methods of production that, although known at lower levels of output, were not then feasible. In these circumstances production may exhibit *increasing returns to scale*—or economies of scale—so that a doubling of all inputs may be associated with a more than doubling of output. Vice versa, increases in output may be associated with difficulties not present at lower levels. The increase in the size of the firm may be accompanied, for example, by much red tape and great difficulty in getting decisions made. Should this occur, the doubling of all inputs may be associated with a less than doubling of output, involving *decreasing returns to scale*—or diseconomies of scale.

Note that the greater or smaller returns to factor inputs that are involved in economies and diseconomies of scale are *not* due to changes in technology or knowledge. As in the short-run case, a long-run production schedule assumes that knowledge and technology remain constant. But methods of production in use may change as the scale of operations is altered. It is, in fact, variations in methods of production that are responsible for economies and diseconomies of scale.

## The Production Function

The laws of production can be illustrated more concretely by reference to what is called a "production function," which is a statement of the relationship between inputs and outputs. Assuming that only two factors are required to produce a given product, the production function can be presented in tabular form. The horizontal axis shows varying quantities of one of the factors (labor), while quantities of the other factor (capital) are shown on the vertical axis. Each cell contains a number showing the level of output that results from the combination of the factors shown on the respective axis. Thus in the production function presented in Table B-2 a combination of five units of labor and four units of capital yields 314 units of output, whereas two units of labor and three units of capital yield 173 units of output.

### TABLE B-2

### A Production Function

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Units of Capital | 6 | 173 | 244 | 300 | 346 | 388 | 420 |
| | 5 | 158 | 224 | 274 | 316 | 353 | 388 |
| | 4 | 141 | 200 | 245 | 280 | 314 | 346 |
| | 3 | 122 | 173 | 210 | 245 | 275 | 300 |
| | 2 | 100 | 140 | 173 | 200 | 224 | 244 |
| | 1 | 70 | 100 | 122 | 141 | 158 | 173 |
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| | | Units of Labor | | | | | |

Note that the firm is operating under conditions of constant returns to scale. This can be verified by examining the behavior of total output when inputs are varied proportionately. Thus a combination of one unit of capital and two units of labor yields 100 units of output, whereas a combination consisting of two units of capital and four units of labor yields 200 units. A similar relationship exists for all other such combinations shown in the table.

## The Least Cost Combination

The production function makes clear that a firm can produce any given output in various ways and is particularly useful in explaining the manner in which a firm selects the best method of producing any given output. Assume, for example, that the firm wishes to produce 173 units of output. The production function reveals that this level of output can be produced by combining

a) six units of capital with one unit of labor;
b) three units of capital with two units of labor;
c) two units of capital with three units of labor; or
d) one unit of capital with six units of labor.

These combinations represent the technical possibilities available to the firm in producing 173 units of output. One of the firm's tasks is to select from among them the method of production that involves the least cost, for the firm will obviously maximize its profit by selecting the method that results in the lowest cost, called the "least cost combination."

To determine the least cost combination, the firm must know (in addition to its production function) the relative prices of capital and labor, for the relative prices of inputs influence the combination selected. Let us assume the firm is operating in a perfectly competitive factor market with factor supply curves to the firm that are perfectly elastic, so that its scale of operation has no effect on factor prices. Table B-3 shows the cost of producing 173 units of output with each of the technologically feasible methods under two sets of conditions. In Case I a unit of labor can be purchased for $3 and a unit of capital for $2. Then combination (b), consisting of three units of capital and two units of labor, is the least cost combination—the least costly method of producing 173 units. But in Case II, when a unit of labor costs $2 and a unit of capital $3, combination (c), consisting of two units of capital and three units of labor, is best.

## The Logic of Factor Substitution

Table B-3 can also be used to illustrate the principle of substitution, which suggests that a decline in the price of one factor relative to that

TABLE B-3

The Least Cost Combination

| Technically Possible Combinations | Case I<br>Capital $2<br>Labor $3 | Case II<br>Capital $3<br>Labor $2 |
|---|---|---|
| a) six units of capital and one unit of labor | $15 | $20 |
| b) three units of capital and two units of labor | $12 | $13 |
| c) two units of capital and three units of labor | $13 | $12 |
| d) one unit of capital and six units of labor | $20 | $15 |

of another will increase the use of the factor that has become less expensive and reduce the use of the factor that has become relatively more expensive. Let us examine the logic behind the process of substituting one factor for another. Recall that combination (a), consisting of six units of capital and one unit of labor, yields the same output as combination (b), consisting of three units of capital and two units of labor. This implies that it is technically possible to substitute one unit of labor for three units of capital without altering output. This is another way of saying that at this point the marginal physical product of one unit of labor is three times the marginal physical product of one unit of capital. When will it pay the firm to substitute one unit of labor for three units of capital? Obviously when the cost of one unit of labor is less than the cost of three units of capital. Under these circumstances, substituting one unit of labor for three units of capital will permit the firm to produce the same level of output at a lower cost. When the firm can buy a unit of labor for $3 and a unit of capital for $2, substituting one unit of labor costing $3 for three units of capital costing $6 is obviously a wise move. Because of this combination (b) costs $3 less than combination (a).

The same reasoning suggests that it is not worth while for the firm to continue substituting labor for capital by moving from combination (b) to combination (c). Between combination (b) and combination (c), one additional unit of labor can replace one unit of capital with output constant. A unit of labor, however, costs the firm $3, but a unit of capital costs $2. To substitute labor for capital in these circumstances results in a $1 increase in the total cost of production.

Thus the firm will find it profitable to substitute labor for capital so long as the ratio of marginal physical product of labor to the marginal physical product of capital is greater than the ratio of the price of labor to the price of capital. This can be stated as follows: If

$$\frac{\text{MPP of Labor}}{\text{MPP of Capital}} > \frac{\text{Price of Labor}}{\text{Price of Capital}},$$

then the substitution of labor for capital will result in a reduction in the cost of production. On the other hand, if

$$\frac{\text{MPP of Labor}}{\text{MPP of Capital}} < \frac{\text{Price of Labor}}{\text{Price of Capital}},$$

a reduction in the cost of production could be effected by substituting capital for labor. The least cost combination, therefore, is the one that satisfies the following condition:

$$\frac{\text{MPP of Labor}}{\text{MPP of Capital}} = \frac{\text{Price of Labor}}{\text{Price of Capital}}.$$

This, in turn, suggests that the firm should combine the factors of production so that the last dollar spent on each factor makes an equal contribution to total product. If this condition does not exist, one factor must be yielding a larger return per dollar at the margin than the other factors, and it will pay the firm to employ more of the former and less of the latter. The parallel among balanced use of factors by a firm, balanced use of income by an income recipient, and balanced use of factors by the economy as a whole, which was discussed in Chapter 6, should by now be obvious. Note that the least cost condition does not state that the marginal physical products of all factors must be *equal;* this is true only if factor prices are equal.

### The Demand for Factors When All Inputs Are Variable

The preceding discussion illustrates the way in which a firm's demand for factors of production is determined in the long run when all inputs can be varied. Given a knowledge of factor prices and its production function, a firm can determine the least cost method of producing any given output, from which can be derived the long-run marginal physical productivity schedule for any factor. This in turn can be transformed, in the manner already discussed, into the long-run marginal revenue productivity schedule of the factor by using price or average revenue when the demand for the product of the firm is perfectly elastic and marginal revenue when demand is less than perfectly elastic. Moreover, if the firm wishes to maximize its profit, the long-run marginal revenue productivity schedule will, as before, determine the firm's long-run demand for each of the factors of production, provided that the supply curve of factors to the firm is perfectly elastic. Where, however, the curve is rising, then once again the firm will hire factors only to the point where the marginal revenue product of a factor is equal to its marginal cost, so that the factor's marginal revenue product will exceed the wage it receives.

# 17 Functional Distribution—Capital and Resources

## Marginal Productivity Analysis and Interest

Compensation of capital takes various forms. In this chapter let us lump together all the specific forms under the heading "interest," using the term to include the *entire* compensation received by capital. To simplify the exposition, let us also start by treating capital as if it were uniform, disregarding the fact that in reality capital in its various forms receives various rates of compensation, so that in the economy there is actually a *structure of interest rates* rather than the single rate we shall use.

The marginal productivity analysis developed for labor in the last chapter may equally well be applied to capital. In fact, as owners of capital do not have to be present when the services of capital are performed and ownership of low-prestige types of capital can in many cases be concealed, it seems probable that supply curves of capital to firms and industries reflect differences in preferences to a far smaller extent than they do for labor and so are far more uniform. But otherwise there appears to be no significant difference in the application of marginal productivity analysis to capital. Hence no purpose would be served by repeating for capital the analysis of the previous chapter.

## Economic Contribution and the Payment of Interest

On the other hand, the case for paying capital on the basis of its economic contribution does deserve discussion, for we must consider

Marx's contention that, as labor is the source of all value, the creation by a market economy of "surplus value" and its payment to capital is nothing but a device to "exploit" labor by taking from it a part of the full reward to which it is entitled. Certainly unless capital makes a contribution and deserves a return, free enterprise would indeed appear guilty of exploitation.

Capital goods—buildings, machinery, tools, all the things that facilitate further production—are in the last analysis a combination of resources with labor performed in the past, which has transformed, for example, bauxite ore into an airplane. Suppose, to simplify, we disregard the contribution of natural resources. Then, since labor alone would appear to be responsible for capital goods, what service is performed by capital that justifies a payment to it? Why should labor not receive everything that does not go to pay for the use of resources?

The basic answer is that, as noted in Chapter 5, there is no reason whatsoever why labor should not receive everything else *if it does not care when it is paid.* For the essence of a capital good is that its services are available only over a period of time. Suppose, to repeat the example of Chapter 5, that $100 worth of labor is this year embodied in a machine with a life of exactly twenty years (and no value as scrap thereafter). Now, if the services of the machine could be sold for $5 a year over the life of the machine, its owner would get his money back but nothing more. Because most of us prefer the present to the future, most of us would not be interested in owning a machine that returned no more than it cost. On the other hand, if its services could be sold for $9 each year, we might be interested—though, after setting $5 aside for depreciation, the $4 net return would be little more than we would receive from investing in government savings bonds. The net return is what the capitalist receives for advancing $100 now and accepting repayment over a twenty-year period. It is, in short, the payment made for "waiting." Note that there is no *theoretical* reason why labor, which feels itself "exploited" when paid $100 for a machine whose services can be sold for $180, should not end the "exploitation" by accepting $9 a year for the next twenty years.

What is possible in theory will, of course, be possible in practice only if the individual involved can afford to postpone being paid. When the reason for payments to capital was first considered, it was said that the payment was for "abstaining" from consumption. This description of the matter brought a rather ribald reaction from socialists, who pointed out that a rich man busily engaged in eating and drinking himself to death will in this sense be practicing "abstinence" if he does not have time to consume all his income, whereas a poor man whose income is so small that he in fact has to "abstain" from buying almost everything will be treated as if he never "abstains" at all! Moreover, if a man receives a large inheritance, he will be treated as receiving the fruits of great "abstinence"—though he may always have spent every penny that he could lay his hands on! Can we cut through the color words to get at the basic issues involved?

### The Role of Voluntary Saving

The first thing to stress is that—however the process is described—the provision of capital *under any system* does indeed involve doing without consumption. For the factors used to produce capital goods could always have been used instead to produce consumption goods. In other words, part of the income of a period must not be consumed but, rather, must be "saved." "Saving" is a word of many meanings. In common speech, used in the plural, "savings" frequently refer to the total assets that a man has accumulated; this meaning is rarely used in economics and need not be discussed further. But "saving" in the singular has at least two different meanings. It may mean income of one period not spent on anything in the following period or it may mean income spent on investment rather than consumption. The first of these meanings becomes important in connection with the fluctuations in income with which Section IV is concerned. But, until Section IV, we will use "saving" to mean spending on investment rather than on consumption.

Who does not consume in order to save and invest? Under Communism it is mainly the public as a whole that does without—a point the Russian public seems increasingly to understand! But under free enterprise—at least in the United States—most saving is provided voluntarily by a relatively small number of income recipients. The case for relying on voluntary saving by individuals is that, so long as there are differences in income and in needs, there must also be differences in the ease with which saving can be undertaken. Voluntary saving allows for these individual differences, permitting much saving to be provided by those who can save easily (perhaps because they have large incomes) and little saving by those who save with difficulty (perhaps because their incomes are small and their families large). Clearly, where there are significant differences among income recipients, relying on voluntary saving rather than on a uniform percentage for everyone tends to minimize the burden involved in providing any given quantity of saving.

In fact, the case for catering to individual differences in the willingness to save appears to have been recognized to an increasing extent in the Soviet Union—perhaps because increasing differences in incomes are being allowed. Individuals can today invest in, and receive interest on, bonds issued by the government, so that part of the saving in the Soviet Union is provided by a group who receive payment for doing more saving than the rest of the population. But most Soviet saving is provided by the population as a whole. One technique used is to price goods above their cost of production and use the resulting "surplus" to finance the creation of capital goods. A second technique is to levy taxes and use the proceeds to provide saving. As Soviet taxes are not particularly progressive, both techniques appear to spread relatively uniformly on everyone the burden involved in providing saving.

### Saving in the United States

Because of the importance of saving and capital formation in connection with economic development, detailed statistical information on sources and uses of funds not spent on consumption or used to pay taxes is presented in Chapter 33. Here we are interested in the *underlying logic* of the way in which saving is provided in the United States. Although most of our saving is personal and voluntary, in recent years perhaps 25 percent has been provided by corporations and 15 percent by government.[1] Corporate saving is possible because the goods sold are priced at a level higher than their cost and the resulting profit is retained in the business. In form, therefore, corporate saving is quite like the first Soviet technique. Whether the substance is the same depends on whether, if not saved, the profits would have been paid out as dividends to corporate owners or used to lower prices or raise wages. Where competition prevails, corporate owners would presumably benefit if the saving were eliminated, as profits would presumably be unchanged and dividends increased proportionately. In this case it would appear that the owners of corporations are indeed providing the saving. But, where monopoly power is being exercised and the price is deliberately raised so as to provide a corporation with funds for expansion, the issue as to who is providing the saving is far from clear. It can be argued, for example, that the funds are being provided, not by corporate owners, but rather by the general public which has to pay the higher prices.

### The Responsibility for Providing Saving

Strict believers in laissez faire argue that the decision to save is "valid" only when made by individual income recipients and that the amount of saving should be entirely determined by such decisions. This clearly rules out, in the United States, the saving provided by government, and it is certainly stretching reality to argue that the level of corporate saving is determined by stockholders. In fact, some believers are prepared to carry their reasoning to its logical conclusion and argue that corporations should distribute all their earnings as dividends and reinvest only that portion which the stockholders are prepared to return voluntarily to the corporation; that the government should neither add to nor subtract from the supply of saving; and even that, if income recipients in underdeveloped areas refuse to save, they are voting against development and the government should not interfere with their choice! This is, of course, simply an example of the point of view that believes that the only "valid" decisions are those made by individual income recipients; it is a view we shall want to examine in greater detail in connection with the discussion of the proper role of government in Chapter 24.

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[1] See Table 33-2.

The case against exclusive reliance on individual decisions is that, just as with expenditures on education, the overall level of saving is of such social importance that it cannot be left to the decisions of income recipients acting individually. Because our general level of saving has been relatively satisfactory, the idea that the government should concern itself with the overall level of capital formation has received little or no recognition in the United States. But in Great Britain, where many feel that the rate of saving in recent years has been too low, the matter has come in for more direct government attention, and the distinguished British economist, Sir Dennis Robertson, has written: ". . . the State has [now] claimed the right and assumed the duty of making and implementing on behalf of the community one of the most fundamental of economic choices, namely the distribution of productive resources between present and future uses. In other words, it has taken upon itself responsibility for determining the rate of growth of the community's real capital."[2]

The basic reason why many feel that government should concern itself with the level of saving is that the level of saving has a direct bearing on the rate of economic development. Let us therefore postpone further consideration of the role the government should play in regard to saving until we consider saving in relation to economic development in Chapter 33. But it is worth making clear immediately that government "concern" with the level of saving does not necessarily mean that the government would itself have to provide such additional saving as was felt to be needed—and still less that it would have to invest the sums involved. We have thus far been discussing net saving—gross saving less depreciation allowances. The actual amount of depreciation allowances that business puts aside, in contrast to the economically correct "real" depreciation, is greatly influenced by the allowances that the government permits business to use in computing corporate net income. Simply by making allowances for tax purposes more generous, the government can, in effect, reduce a shortage of net saving. And it is also possible for the government to encourage greater use of corporate saving.

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[2] D. H. Robertson, *Utility and All That* (New York: The Macmillan Company, 1952), p. 116.

Moreover, even if the government itself undertook to provide additional saving, no new institutional arrangements would be needed, and it would not be necessary for the government to invest the sums involved, for the government can today either generate or absorb large volumes of saving by running appropriate surpluses or deficits. The possible use of government deficits as a device to put newly created, or otherwise idle, money into circulation during depressions and thereby contribute to the elimination of business fluctuations has been widely discussed since the Great Depression that started in 1929. But suppose during prosperity the government runs a surplus as a result of taxes that fall entirely on consumption, and uses the funds provided by the surplus entirely to retire government debt. It has been less generally recognized that the resulting increase in liquidity (in the sense of the supply of funds available for investment) may well lead to an expansion of investment. Conversely, deficits, when financed by borrowing in the capital market, may well, by decreasing liquidity, lead to a reduction in investment. This whole matter will be explored further in Section IV. But, to sum up the situation for present purposes, it appears that at certain times, particularly when the economy is depressed, the main impact of government surpluses and deficits may well be on the level of income because investment may be substantially unchanged by what the government does; but at other times, particularly when the economy is prosperous, the main impact of surpluses or deficits may well be on the relationship between consumption and investment because investment is likely to be directly influenced by the funds made available by the government's surplus or absorbed by the government's deficit.

## Saving and the Payment of Interest

Should those who save be compensated for their efforts? Even the Soviet Union recognizes that those who voluntarily postpone consumption are providing a socially useful service that is worth rewarding. In fact, unless a reward is provided, it seems likely that relatively little reliance on voluntary saving will be possible. There are, admittedly, some people with large present incomes who may be willing to give up a dollar today in exchange for less than a dollar in the future when they expect their incomes to be lower. But the amount of saving they are likely to provide is probably quite small. For, as already noted, most people appear to prefer a dollar today rather than a dollar tomorrow. Hence people are unlikely to provide any significant amount of saving unless they are paid for doing so. On balance, it seems likely that higher payments will tend to increase saving; but this is a matter that has been much debated in recent years, and the extent to which higher payments can be expected to increase saving remains in dispute.

### Interest Payments and the Allocation of Capital

Is any purpose served by paying interest other than that it must be paid if people are voluntarily to provide any significant amount of saving? Recall that paying labor the market value of its services made possible the allocation of the labor supply among alternative employment opportunities with a maximum regard for individual job preferences. Although some types of investment may carry more prestige than others, the matter of individual preferences is of little importance in the case of capital, but the necessity for allocating capital among alternatives remains.

The case for using interest as an allocating device can best be understood by considering some of the problems Russia has run into as a result of rejecting it. For, despite the willingness of the regime to pay interest on voluntary saving, Communist doctrine still contends that labor is the source of all value and does not allow interest to be charged for the use of capital, as this might imply that capital was "productive" and therefore a source of value. The people hit hardest by this doctrine have not been economists but those responsible for designing, for example, railroads. It is practically impossible to design a railroad without some knowledge of the relative value of present and future labor that is provided by the interest rate. Specifically, the more that is initially spent on reducing the grades and straightening the curves of a railroad, the lower will be its future operating costs. Under free enterprise this problem is routinely solved by comparing the cost of additional capital with the reductions in operating costs that such capital will achieve. But, if no charge is made for capital, there appears to be no reason why vast quantities should not be used in initial construction—which obviously makes no sense in a country that has as much need for capital as the Soviet Union.

The result is that those responsible have had a rather miserable time in Russia in recent years trying to invent some terminology which would permit them to get on with the practical job of designing sensible railroads but not land them in concentration camps for doctrinal deviations!

It does not appear that the problem has as yet been satisfactorily solved in the Soviet Union. But some socialists with economic training—as opposed to Communists trapped by party dogma—have come to admit the effectiveness of interest as an allocating device and have proposed that under socialism "accounting" interest be charged capital-using enterprises both to solve the problems just discussed and to ensure the most effective allocation of available saving. We shall explore how this might be done in a socialist economy in Chapter 26. How it is done by the market mechanism in a free enterprise economy can perhaps best be seen with reference to resources, for we shall see that a main justification for the payment of economic rent is the contribution it makes to the effective allocation of available resources.

### Interest and Risk

We started by ruling out variations in interest rates and have thus far treated interest as if it were a quite uniform compensation paid to reward those who save. Let us conclude by pointing out that, in reality, part of the actual return received by capital is a reward for allowing saving to be invested in undertakings where there is a *risk of loss*. This is true whether funds are loaned to entrepreneurs in exchange for a bond or note or whether the investor becomes, in one sense, an entrepreneur himself by purchasing stock in a corporation. The need for compensation against varying degrees of risk plays a major role in explaining actual differences in the compensation received by different types of capital.

### Economic Contribution and Economic Rent

Natural resources include "everything made available by nature that is useful for production" and receive economic rent as compensation for their services. In addition to agricultural land, minerals of all sorts, waterfalls, forests, even animals in the forest all qualify. Differences in the availability of natural resources are frequently offered as an explanation of differences in living levels. Chapter 34 examines in some detail the role of resources in connection with living levels as a part of our general consideration of the factors affecting living levels. At that point the derivation of rent, which is a payment for the superior economic usefulness of a particular resource, will also be explained. Here we shall concentrate entirely on the case for allowing economic rent to be paid for the use of natural resources. To simplify the discussion, we shall carry it on entirely in terms of "land," omitting all other natural resources. Bear in mind that those who live in cities rarely ever see what an economist means by "land." Even a parking lot is likely to embody much capital, used to remove rocks, fill in holes, and pave the surface. In fact, even the value of farm "land" often results more from the capital that has been invested in clearing and preparing the soil for cultivation than from the raw land itself.

As already noted, indignation regarding the payment of economic rent has a long history in economics, with by far the bitterest attack coming from the American economist Henry George, who argued that rent was pretty much the source of all evil and advocated a "single tax" on rental payments that he believed would meet the entire cost of government and eliminate the need for all other forms of taxation. Certainly it is understandable why many besides socialists should be bothered by the Wendell sisters. They were two maiden ladies who kept a lot assessed at $1 million for their poodle to exercise in and died leaving a fortune of $60 million, due entirely to their father's foresight in ordering his executors to lease, but never sell, his lumber yard, which was in what is now the Times Square district of New York City! Why should the ladies be paid the economic contribution of the land they owned, when their only contribution was to have inherited a piece of property that happened to be located where a lot of people wanted to be?

On the theoretical level, there does not appear to be any defense for paying land the market value of its economic contribution when, by definition, the supply has been made available by nature without effort on the part of man. The case for the payment of rent is based on two *practical* propositions: first, that in this way available land will be put to the uses where it is most valuable; and, second, that in this way the land will be improved to the extent that is economically desirable. The first point is, in effect, that private ownership ensures the most desirable allocation of land among alternative uses. The demand for land, derived from the appropriate marginal revenue productivity schedule, reflects the market valuation of the product to which the land has contributed. The landowner, seeking to maximize his income, rents to the entrepreneur whose demand is greatest, with the overall result that any given piece of land tends to be put to the use the market establishes as most valuable.

### The Taxation of Rent

Granting that private ownership ensures the best allocation of land, is there any reason why the rent received should not be subject to George's single tax? Obviously the rate could not be set at 100 percent, as no one could be expected to see that the land was put to its most valuable use if the only result was to increase the tax he owed the government. What of a level that was high but still provided an incentive to maximize rental value? Again in theory there appears to be no objection to the proposal. Even if the tax were set at an extremely high level, so long as it was applied uniformly to all rent, the landowner would have an incentive to leave the land in its most productive use: even 10 percent of the highest possible rent is still better than 10 percent of any other rent.

But there would be many practical difficulties. Determining the exact economic rent in any concrete case would be extraordinarily hard from the administrative point of view—just as Shylock found it hard to extract an exact pound of flesh. Yet if the tax actually levied impinged on the return to the capital that had been invested in improving the land, it would inevitably discourage the making of improvements and cause capital to be diverted to other uses. The mere *fear* that this might happen would be likely to impede land development if the tax rate was set at a high level; but if the rate was not set high, the revenue would hardly justify the administrative cost involved. Because businessmen and accountants have no incentive for distinguishing between economic rent and interest in the case of improved land, no very precise estimate can be made of the importance of rent in the economist's sense. But Chapter 34 presents evidence that the total is almost certainly small—in all probability not more than 2 or at most 3 percent of the national income. Hence, even if the entire amount of rent could be taken by taxation, a "single tax" would still not be possible; many more taxes would be needed to meet the present cost of government.

In practice, if anything is done about rent, it seems likely that the administrative approach will have to be quite different from a tax on rent. In Great Britain the first effort to deal with the matter was a tax on "unearned increment" put through by the Liberal party before World War I. More recently, a heavy tax has been imposed on the increase in value that occurs when land is shifted from, say, agricultural to residential use. This sort of thing is feasible in Great Britain because changes in land use now require the approval of local planning boards. But it is not clear that the British technique has achieved enough to justify the trouble involved.

### Public Ownership of Urban Land

An alternative that has received little professional attention would be greater reliance on public ownership of urban land. For probably the only quantitatively significant problem at the present time involves land in cities; it was such land that provided our maiden ladies with their $60 million! Suppose, over time, that cities came to own much of the land within their limits and that such land was leased to the highest bidder for periods commensurate with the use to which the land was to be put. Then, to the extent that reliance on leasing is feasible, the land would be put to the use in which it was most productive, but the long-term increase in land values as a result of continuing population growth would accrue to the city rather than to the private landowner.

## Rent and Population Growth

So radical a proposal is certainly not justified by the present importance of economic rent. In fact, the whole subject of economic rent is today obviously of greater theoretical than practical interest. The increase in mobility resulting from the widespread ownership of the automobile has brought about an exodus from the central city and sharply limited the increase—or even caused a decrease—in urban land values. But continuing population growth may in time significantly change the situation. Already land with special features—such as frontage on the seashore—has risen quite noticeably in value. Strangely enough, when economists first began to analyze the effects of population growth more than a century ago, one of their first conclusions was that the future belonged to the landlord. Thus far improvements in technology and mobility have held his share to quite acceptable levels, but we cannot expect to double our numbers every half century for long without bringing about a general increase in the importance of rent. It is less clear, however, that very high values in the central city need be involved; it may be that the movement of industry and shopping areas to the suburbs will prevent any such development. To the extent that this happens, public ownership of urban land appears less the solution than efforts to recapture, along the lines of what is now being done in Great Britain, the increase in value that occurs as land moves from agricultural to residential and business use.

In short, apart from its theoretical interest, only the possibility that economic rent may become considerably more important in the future, as the result of continuing population growth, justifies the attention we have given the matter. At present the practical importance of economic rent is quite minor.

# 18

# Functional Distribution—Recent Changes

## Functional Distribution and National Income Estimates

National income estimates break down income into five categories: compensation of employees, proprietors' income, corporate profits, rental income of persons, and net interest. Employee compensation—which includes the salary of the company's president as well as the wage of the janitor—clearly goes to labor. Proprietors' income, on the other hand, combines payments to all factors of production. Fortunately estimates are available dividing such income between labor and property; these are presented in Table 18-1, which summarizes changes in the functional distribution of income since 1900.

Unfortunately no distinction between rent on natural resources and interest on capital is possible. All returns to property, including corporate profits, net interest, and the property component of proprietors' income include a return to resources in the economic sense. Moreover, rental income of persons as reported in income accounts is actually the return on "real property" owned by individuals, and is, therefore, of no help in estimating rent in the sense in which economists use the term.

## Major Changes Since 1900

Table 18-1 summarizes many influences. The share going to employees, for example, was relatively high in the depression decade of the thirties. During periods of unemployment, employee compensation tends to decline less rapidly than business income, so that the share going to labor tends to rise. In fact, in 1932 and 1933, when business was acutely

## TABLE 18-1

## Functional Distribution of the National Income Since 1900

(Percentages)

| Period | Employee Compensation | Proprietors' Labor | Total Labor | Net Interest | Rental Income of Persons | Proprietors' Property | Corporate Profits | Total Property |
|---|---|---|---|---|---|---|---|---|
| 1900–09 | 55.0 | 14.4 | 69.4 | 5.5 | 9.1 | 9.2 | 6.8 | 30.6 |
| 1910–19 | 53.2 | 14.9 | 68.1 | 5.2 | 7.7 | 9.3 | 9.7 | 31.9 |
| 1920–29 | 60.5 | 11.2 | 71.7 | 6.2 | 7.6 | 6.4 | 8.2 | 28.4 |
| 1930–39 | 66.8 | 9.7 | 76.5 | 8.2 | 5.0 | 5.3 | 4.9 | 23.4 |
| 1940–49 | 64.3 | 10.9 | 75.2 | 2.2 | 3.6 | 6.0 | 12.9 | 24.7 |
| 1950–59 | 68.1 | 8.8 | 76.9 | 3.2 | 3.3 | 4.4 | 12.2 | 23.1 |
| 1960 | 70.5 | 7.6 | 78.1 | 4.5 | 3.0 | 3.8 | 10.6 | 21.9 |

SOURCE: Estimates through 1949 from D. Gale Johnson, "The Functional Distribution of Income in the United States, 1850–1952," *Review of Economics and Statistics*, May, 1954, Table 1. Estimates thereafter from the Department of Commerce on the assumption that two thirds of the income of proprietors goes to labor and one third to property.

depressed, corporate profits were negative, which means that business paid out more than it took in and the share of labor was unprecedentedly high. When we are interested in the trend of income distribution over time, therefore, it is essential to make comparisons between periods when the level of business activity is similar. The growing importance over the period of the corporate form of business organization is reflected in the increase in the share going to both employee compensation and corporate profits. This expansion took place mainly because agriculture, where proprietors predominate, has declined in importance, but also because proprietors have become less important outside of agriculture.

Let us compare 1900–1909 with 1950–1959, which were by and large both periods of reasonably comparable prosperity. Overall three important changes are evident: the share of labor as a whole increased by 7.5 percentage points over the period and in the last decade amounted to 77 percent of the national income; the share of noncorporate property—including net interest, rental income of persons, and proprietors' property income—was cut in half and in the last decade amounted to only 11 percent of income; and the share of corporate profits increased from under 7 to 12 percent of income. These apparently simple changes are the result of highly complicated influences, not all of which are understood. Some suggestions regarding the influences at work are nonetheless worth making.

## The Share of Labor

Why has the share of labor risen so noticeably? A possible explanation of the increase is the growing strength of labor unions, both directly at the bargaining table and indirectly as a result of their enlarged political power. That unions may have been a factor in the change is possible, but labor's share started to increase long before unions became important during the thirties. There is, in fact, no agreement among economists as to the extent to which unions have been able to improve the relative economic status of their members, and an extended consideration of the role of unions in Chapter 21 reaches the conclusion that their influence has not been of major importance. Let us therefore examine some of the other influences that have been at work; we shall find that they go far toward explaining the changes that have taken place.

Suppose Industry A distributes 60 percent of its income to labor and 40 percent to property while Industry B distributes 80 percent to labor and 20 percent to property. If the two industries were equally important, then the average distribution would be 70 percent to labor and 30 percent to property. But suppose Industry A declined so that it accounted for only one quarter of output while Industry B grew to account for three quarters. Then, without any intraindustry changes whatsoever, the average share going to labor would rise from 70 to 75 percent of total income. Something of this sort appears to have been happening in the American economy as a result of the decline of agriculture. Estimates suggest that property in agriculture receives close to 40 percent of income and labor only a little more than 60 percent. But agriculture accounted for a third of employment in 1900–1909 and only a little more than a tenth in 1950–1959. Assuming that the nonagricultural areas distributed 80 percent to labor throughout, the decline in the relative importance of agriculture would by itself explain an increase from 73 to 78 percent in the share going to labor.

Moreover, as a result of the estimating difficulties mentioned in Chapter 2, there is *no* allowance in our income estimates for the contribution of government capital, so that *all* the income reported as distributed by government goes to labor. But the importance of government has rather more than doubled since the turn of the century. Overall it appears that perhaps two thirds of the observed shift in the direction of labor can be explained on the basis of plausible assumptions regarding the impact on the economy of the increasing importance of government and the declining importance of agriculture.

### The Share of Noncorporate Property

The share going to net interest reflects changes in the price paid for capital as a result of changes in the availability of saving, but the impact of inflation and deflation has probably been of even greater importance. When prices decline, the share going to those receiving a fixed number of dollars as interest (in the absence of defaults) tends to increase and, when prices rise, to decrease. Thus the share going to interest reached a peak in the depressed decade of the thirties, when prices were much lower than they had been in the twenties—despite the fact that toward the end of the period current interest rates were relatively low. Again a continuance of low levels of current interest and a substantial increase in prices after 1940 led to a sharp decline in the share going to interest during the decade of the forties, while the increase in the share during the fifties reflects the higher prevailing rates of interest and the slower rate of increase in prices.

The influences affecting rental income of persons have been similar to those affecting the share of interest, except that the extent of defaults on contractual rents during the depression caused the rental share to decline at a time when the interest share was rising. Note that ownership of both these shares is quite broad. Close to 40 percent of the rental total is income "imputed" to homeowners to measure the benefit they receive from the houses they own, while another 20 percent represents payments to individuals (mainly retired farmers) by those who have rented farm property. Although the distribution of the receipt of interest is more difficult to determine, it goes to those having savings accounts, life insurance policies, mortgages, and the like, so that claims to interest are also widely spread.

The same appears true of the property component of proprietors' income. Although farmers now receive only about 25 percent of the total, they may well receive a third or more of the property component. Again, those receiving the highest incomes among proprietors are mainly doctors and lawyers, who own relatively little business property. Although some of the property component of proprietors' income is certainly received by those in the higher income brackets, the overall amount is probably relatively small.

### Corporate Profits

Corporate profits, on the other hand, increased substantially over the period and during the last decade received 12 percent of the national income. Actually in 1950 corporate profits amounted to almost 15 percent of the national income, but since then their relative importance has been steadily declining, reaching less than 11 percent in 1960. Part of the explanation of the decline is that 1950 was marked by a sudden expansion of spending induced by fear that the Korean crisis would lead to shortages comparable to those experienced during World War II; with labor costs relatively fixed, a sudden increase in spending tends to increase profit margins. The subsequent decline in the relative importance of profits appears to have been explained in the main by increasing competition, resulting from enlarged productive capacity, though the recession that occurred during the second half of 1960 was responsible for the low level reached in that year.

Despite the decline since 1950, corporate profits in a normal year are still likely to be between 11 and 12 percent of the national income. Corporate ownership, moreover, is known to be concentrated; about half of all dividends are received by the top 1 percent of income recipients. Using the averages for the decade 1950–1959, it would appear that, if corporate profits were cut in half, all labor income could be increased by almost 8 percent.[1] Would not such a shift be socially desirable? As we have already noted in connection with the discussion of monopoly profits in Chapter 12, a basic difficulty faced by any effort to redistribute corporate profits is that corporate taxes have in recent years absorbed roughly half of such profits, and almost half of what remains is retained and reinvested in the business. Specifically, in 1960, 5 percent of the national income was taken by corporate income taxes and over 2 percent was reinvested, so that dividend payments received by corporate owners amounted to less than 3.5 percent of income. Hence complete elimination *of all current payments* to corporate owners would make it possible to raise labor income by less than 4.5 percent.

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[1] The computation is $(76.9 + \frac{12.2}{2}) \div 76.9$.

Because of its bearing on tax policy and tax burden, the whole matter of the taxation of corporate profits is controversial. It will help to clarify the issues if we review certain fundamentals. The income of unincorporated business is taxed as part of the personal income of the proprietor or partner—in exactly the same way as wages and salaries or other income is taxed. This means that the part of $100 that an unincorporated proprietor can consume or reinvest in his business may be anywhere from $10 to $80 (or conceivably more), depending on his tax bracket. On the other hand, because a corporation is a separate legal entity, it is subject to direct taxation of its income, with about half (as we have seen) going directly to the government. Any dividends that are thereafter paid out are themselves subject to personal income taxation—in exactly the same way (with certain minor recent exceptions) as other personal income is taxed. Thus where a stockholder of a corporation and an unincorporated proprietor are subject to identical rates of personal taxation, the proprietor will have roughly twice as much as the stockholder to spend on consumption. The stockholder, however, may benefit in connection with reinvestment in the business, for, after payment of corporate profits taxes the remaining $50 may, if it is needed, be retained in the business without further taxation. Where the tax rate on the additional income of a proprietor is 50 percent or less, reinvestment is easier for the proprietor; but where it is 50 percent or over, the stockholder comes out ahead.

### Income versus Consumption

In determining the national income, to make sure that corporate taxes and corporate saving are not overlooked, they are treated as if they were paid or retained by the corporation for the account of its stockholders; hence corporate profits before taxes and saving, rather than dividends alone, are treated as the share of corporate owners. Whether this is the "right" way of computing income or whether the income of corporate owners is subject to "double" taxation—first when the income is earned by the corporation and again when it is paid out as dividends—is primarily a matter of terminology. We can, however, throw light on the quantities involved by contrasting the distribution of income with that of consumption. Although precise information regarding the distribution of consumption is not available, the estimates summarized in Table 18-2 have been made on the basis of what appear to be reasonable assumptions regarding the percentages of various types of income that are consumed.[2]

**TABLE 18-2**

**Functional Distribution of Income and Consumption in 1960**

(Percentages)

| | Total Labor | Corporate Property | Other Property |
|---|---|---|---|
| Income distribution | 78.1 | 10.6 | 11.3 |
| Consumption distribution[a] | 85.5 | 3.0 | 11.5 |

[a] About 85 percent of the sum of labor incomes, noncorporate property incomes, and dividends were consumed in 1960. The table is constructed on the assumptions that 86 percent of labor incomes, 80 percent of noncorporate property incomes, and 70 percent of dividends were spent on consumption.

## The Validity of Consumption as a Measure of Benefit

To the extent that these estimates are correct—and they are unlikely to be wide of the mark—they suggest that corporate owners receive far less, and labor somewhat more, consumption than income. But is consumption the proper measure of benefit? Keep in mind that the production measured by any given amount of income cannot be used twice; it cannot, for example, be used to provide government services and at the same time increase consumption. Suppose, specifically, that prices were lowered sufficiently to eliminate the $22 billion of corporate profits that were paid in taxes to the federal government in 1960. It is not immediately clear that anyone would benefit from the lower prices, as it would be necessary to impose an offsetting increase in taxes if government purchases of goods and services were not to be reduced. Again, it is essential to our economy that new capital be provided; hence, if prices were lowered so as to eliminate the ability of corporations to retain earnings, then other saving would have to increase correspondingly if capital formation were not to be reduced. In short, to the extent that corporate profits are used for socially necessary purposes such as paying taxes or providing saving, they cannot be redistributed in such a way as to increase the consumption of those who receive them.

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[2] Although estimates made in this way appear reasonably accurate and are little affected by small changes in assumptions, the fact that the estimates are essentially arbitrary should be kept in mind.

But what of possible indirect or future benefits to stockholders? Specifically, does not the income saved by corporations permit stockholders to consume more in the future? The difficulty is that this line of reasoning proves too much. There is nothing unique about stockholders. Owners of all sorts of assets can, by converting their assets into money, spend in excess of their income—in other words, can dissave. As total holdings of assets are perhaps three times annual income, the *potential* impact of dissaving is immense. There have even been times—such as immediately after World War II in Great Britain—when the dissaving of some individuals has been sufficient to offset the saving of others, reducing personal saving as a whole to zero. But none of this invalidates consumption as a measure of *present* benefit. All it proves is that asset ownership in general, and stockownership in particular, makes dissaving possible. When (if ever) dissaving actually occurs, it will show up as *a change in the current distribution of consumption.*

## Corporate Profits and Accelerated Depreciation

An argument worthy of consideration is that corporate profits are understated because of "accelerated" depreciation. Depreciation is, of course, the amount that business sets aside over the life of a machine in order to be able to buy a new machine when the old one has worn out. Repeating our previous example, if a $100 machine has an expected life of twenty years, $5 will be set aside each year, before profits are determined, in order to provide a sum to replace the machine when it wears out. Under "accelerated" depreciation the sum might be raised to perhaps $10 a year for the first ten years, and nothing thereafter. In this case the main impact of "accelerated" depreciation will be to reduce reported profits during the first ten years and to increase them by an *approximately equivalent amount* during the last ten years. Obviously the two sums need not exactly balance; corporate tax rates may change, for example, and the fact of "acceleration" may even have repercussions on the "normal" rate of depreciation permitted by the federal government in computing profits taxes. But any likely difference will almost certainly be small in terms of the magnitudes with which we are dealing.

In short, the distribution of consumption appears to be a substantially valid measure of the current benefit accruing to labor, stockholders, and other property owners. There remains the possibility that expenditures which turn up as business "costs" are in fact incurred for the benefit of corporate officials or stockholders. Clearly when a company plane takes an official to a company yacht for a conference on how the fish are biting, the official receives a benefit not included in his salary. But, with the exception of a few closely held corporations, such expenditures are rarely incurred for the benefit of stockholders—who are generally lucky to get a box lunch out of a corporation at its annual meeting. Hence this point is mainly of importance in connection with the discussion of the personal distribution of income in the chapters to follow.

### Possible Benefits from Redistribution of Income and Consumption

The validity of consumption as a measure of benefit has been discussed at such length—and at the cost of introducing material that will be more fully discussed later—because the possible benefits from redistribution on the basis of the estimates contained in Table 18-2 are surprisingly small. Let us concentrate on the extent to which labor as a factor of production would benefit from redistribution of both income and consumption. Many measures of redistribution are possible. Suppose we start with the broadest conceivable measure and see what would happen if *all* property income from whatever source were redistributed. Then labor income would increase 28 percent (100 divided by 78.1), but the consumption of labor would increase by only 17 percent (100 divided by 85.5). Thus, even if one were to accept the Marxian charge that property in general and capital in particular are nothing but devices to exploit labor by depriving it of the full fruits of its efforts, one would have to admit, in all honesty, that today they are not particularly effective devices. In fact, complete abolition of private property would offer labor approximately the same absolute increase in consumption that it has in the past received from the increase in productivity per man-hour approximately every eight years.[3]

Let us stress that the measure of redistribution just presented is a broad one. It involves eliminating both interest on savings accounts and rental payments received by individuals for the use of real property, as well as the payments that a retired farmer receives for the use of his farm. But suppose that we confine ourselves to corporate profits, which are predominantly received by those in the higher income brackets. What would happen if *all* profits in 1960 had gone to labor? The answer is that labor income would have increased 13.5 percent (88.7 divided by 78.1), but the consumption of labor would have increased by only 3.5 percent (88.5 divided by 85.5)—or rather less than two years' typical increase in productivity per man-hour.[3]

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[3] For details, see Table 28-2.

One word of caution is in order. The results revealed by our statistics reflect a great many influences, including an effective system of taxation, willingness of business to save for future expansion, and reasonably effective competition (or, in the absence of competition, regulation). There is no certainty that these conditions necessarily exist in other free enterprise economies, especially in underdeveloped areas, or even that they existed in the United States in the nineteenth century. The possibility that the cost of free enterprise, as measured by the income received by property, may be significantly higher in underdeveloped areas should be kept clearly in mind when considering the desirability of using free enterprise for the development of such areas. Concretely, it was recently estimated that profits in Mexico amount to as much as 45 percent of the national income and that in commerce "no less than 80 per cent of income payments . . . go to capital."[4] If one wants to understand the appeal of Castro, the Mexican figures should be kept in mind. The fact that the problem of distribution is not urgent in the United States does not mean it is not urgent elsewhere.

## The Importance of Recognizing Unimportance

Why has so much importance been attached to demonstrating the unimportance of redistribution from property to labor under the conditions prevailing in the United States? The answer is that, in all probability, no aspect of a free enterprise economy is more misunderstood. Public opinion polls consistently report that the American public grossly exaggerates the size of corporate profits. There seems little doubt that much of the current pressure for rapid wage increases grows out of the mistaken belief that labor would benefit significantly if profits were reduced. Because of its obvious bearing on inflationary pressures, this whole matter will be considered again when inflation is discussed in Chapter 51, but it should now be obvious that a significant expansion of the share of wages at the expense of profits is impossible under present circumstances.

Even more broadly it seems fair to say that historically the promise of redistribution has been a major appeal—if not the major appeal—offered by socialism. Although many socialists have come to recognize

[3] For details, see Table 28-2.

[4] Adolph Sturmthal, *Journal of Political Economy,* June, 1955, pp. 194, 196.

how little is involved—and in the process have lost much of their enthusiasm for nationalization in and of itself—Communist propaganda continues to stress the existence of "monopoly capitalism" and to imply that labor continues to be "exploited" under capitalism. To point out that, even if the charge were true, relatively little would be involved is likely to be a more effective answer than to debate the quite elusive concept of "exploitation."

The discussion thus far has considered redistribution from property to labor. But redistribution of income received by persons without regard to its source is also possible. This alternative will be considered in the two chapters to follow.

# 19

# Personal Distribution—Present Situation

## Introduction

In this chapter we are interested in the *personal* distribution of *personal* income. In other words, we are interested in the way in which income is distributed without regard to its source. Distributed to whom? In 1959 there were over 69 million in the civilian labor force. Of these around 10.5 million were "unattached individuals" not living with a relative, while about 13.7 million "pooled" their income with another income recipient—perhaps husband, parent, or child. Altogether we had 13.7 million families with two income recipients, over 31 million with a single recipient, and 10.5 million unattached individuals—or a grand total of 55.3 million of what are called "spending units." We shall concentrate on the way in which income is distributed to such units.

What determines the size of a spending unit's income? The general answer is that it depends on the quantity of the labor services sold by the unit (including the services of all those within the unit who are working), times the price at which such services are sold, plus the quantity of services of capital and natural resources sold by the unit, times the price at which such services are sold. Thus the personal distribution of income cuts across the functional distribution of income with which we have so far been concerned. What we shall want to do is, first, present the facts regarding the personal distribution of income, together with some estimates of the quantitative importance of possible changes in income distribution. Next we shall want to consider some of the factors that have been responsible for the changes in distribution that have taken place. Finally, we shall examine in Chapter 20 the desirability of further changes in income distribution.

### The Apparent Inequality of Distribution

Rarely can the same set of statistics be used to justify such diametrically opposed conclusions as in the case of income distribution. Suppose one wants to demonstrate that income is very unequally distributed. The thing to do is to start with a percentage distribution such as is set forth in Table 19-1. Rather striking conclusions follow. The bottom 20 percent of spending units received 4.5 percent of income; the top 20 percent 45.7 percent—or ten times as much per person. Again, the bottom 40 percent received less than four fifths as much as the top 5 percent of spending units. Finally, the income received by the bottom 75 percent of all spending units was rather less than that received by the top 25 percent. It certainly looks as if the benefits of redistribution would be substantial.

TABLE 19-1

Distribution of Personal Income by Quintiles in 1959

(Percentages)

| | |
|---|---|
| First | 4.5 |
| Second | 10.9 |
| Third | 16.2 |
| Fourth | 22.7 |
| Fifth | 45.7 |
| Top 5 percent | 19.9 |

SOURCE: Department of Commerce, *Survey of Current Business*, July, 1961.

### The Difficulties Involved in Redistribution

To throw light on what might be achieved by redistribution let us look at the actual distribution in dollar amounts as summarized in Table 19-2. Suppose we were to decide that no one should be allowed to receive more than 2.5 times the average income for all spending units. The average for 1959 works out at $6,600, which means that on this basis no one would have been allowed to receive more than $16,500 in that year. Information is available only for those with $15,000 and over; to provide each of the 3 million spending units involved with an income of exactly $15,000 would require a total of $45 billion—and would leave

TABLE 19-2

Distribution of Spending Units and Their Personal Income by Income Classes in 1959

| | Number of Units (In thousands) | Total Income (In millions of dollars) |
|---|---|---|
| Under $2,000 | 7,622 | 8,612 |
| $2,000–2,999 | 5,431 | 13,621 |
| $3,000–3,999 | 6,049 | 21,212 |
| $4,000–4,999 | 6,319 | 28,443 |
| $5,000–5,999 | 6,100 | 33,520 |
| $6,000–7,499 | 7,523 | 50,456 |
| $7,500–9,999 | 7,642 | 65,862 |
| $10,000–14,999 | 5,605 | 67,327 |
| $15,000 and over | 3,009 | 76,514 |
| Total | 55,300 | 365,567 |

SOURCE: Department of Commerce, *Survey of Current Business*, July, 1961.

only $31.5 billion for redistribution, which would permit an increase of only *11 percent* in the incomes of those with less than $15,000. If we adjust for the fact that 2.5 times average income in 1959 was actually $16,500 rather than $15,000, the increase for those with less than $16,500 would not have been more than *10 percent.*

This does not allow for the impact of taxation. The best available recent information regarding the distribution of income after taxes is for 1950. Suppose we apply the same 2.5 times average income to the aftertax distribution that prevailed in that year. (To the extent that taxation is progressive, this would permit somewhat greater inequality *after* taxes than limiting everyone to 2.5 times average income *before* taxes.) On this basis about 4.5 percent of income recipients would have been at the maximum and they would have been entitled to 11 percent of aftertax income. But as such income recipients actually received less than 17 percent of aftertax income, limiting incomes to 2.5 times the average would leave less than 6 percent available for redistribution, which would increase the incomes of those below the maximum by *7 percent.*[1]

Nor is this all. We have just seen that 4.5 percent of income recipients received 17 percent of total aftertax income in 1950. Total personal saving in that year amounted to 6.5 percent of aftertax income. If, as seems probable, the top 4.5 percent of income recipients were responsible for approximately two thirds of personal saving, the top group would have saved 4⅓ (⅔ of 6.5) percent of aftertax income—or about one quarter of the 17 percent of aftertax income they received. Suppose limiting everyone to 2.5 times the average, and therefore reducing the income of the top group from 17 to 11 percent of aftertax income, caused the top group to cut its saving from 4⅓ to 2⅙ of aftertax income. Then 2⅙ percent would have to be deducted from the 6 percent available for redistribution. In other words, when allowance is made for *taxes and saving,* the increase in the incomes of those below the maximum *that could have been spent on consumption* would appear to have been in the order of *4.5 percent* $(83 + (6 - 2\frac{1}{6}) \div 83)$.

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[1] Derived from Table 20 of the Department of Commerce's *Income Distribution in the United States* (Washington: 1953).

From these comparisons it is correct to conclude that, provided any significant amount of inequality is to be retained, additional redistribution from the "rich" cannot bring about any important improvement in *general living levels.* But it would be wrong to conclude either that nothing further can be done to improve income distribution or that nothing can be done to help particular groups. Specifically, we noted that limiting everyone to $15,000—without regard to taxes or saving—would have increased the income of those with less than $15,000 by 11 percent, but it would increase the incomes of those under $6,000 by 30 percent, those under $4,000 by over 70 percent, and those under $2,000 by almost 360 percent. The desirability of increasing incomes at the lower end of the scale is therefore a matter to which we shall shortly want to give further consideration.

## The Revolution in Income Distribution

Some who are aware of the limited benefits from further redistribution believe that the limitation results from the fact that the "rich" have always been so few in number as to receive relatively little income; others believe that the limitation is the result of progressive income taxation. Neither is correct. What has happened is that in recent years there has been a revolutionary change in the distribution of income *before taxation.* Evidence from the more distant past is on the meager side, but Simon Kuznets, an outstanding authority on national income accounts, has estimated that the top 5 percent of income recipients in Great Britain received 46 percent of total income in 1880, 43 percent in 1910, 35 percent in 1929, 31 percent in 1938, and 24 percent in 1947.[2] This shift from 46 to 24 involves a 41 percent increase in the living levels of the bottom 95 percent of income recipients (76 divided by 54). Note that this increase has nothing to do with the rise in real incomes since 1880; it measures the improvement that would have resulted *from re-*

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[2] *American Economic Review,* March, 1955.

*distribution alone* even if real income had not risen at all. In a sense it justifies socialists for having been concerned with income distribution in the past. But the 41 percent past increase is four times the additional 10 percent increase that would result, as we have just seen, from cutting everyone back to 2.5 times average income in 1959. Hence, however justified socialist concern with income redistribution may have been in the past, the contribution of further redistribution is clearly relatively minor.

Estimates running over as long a period are not available for the United States. Kuznets estimates that since 1929 redistribution has brought about an 11.5 percent improvement in living levels of the bottom 95 percent. Again evidence derived from a more elaborate study suggests that the comparable figure for the period since 1935 is 8.5 percent. Moreover, the improvement has been greatest toward the bottom of the scale, as Table 19-3 demonstrates. Although real income as a whole increased by over 50 percent between 1935 and 1950, the income of the bottom three income classes increased by 75 percent or more, while that of the top 5 percent increased by only 17 percent. The equality of income distribution has obviously greatly increased in recent years quite apart from the impact of progressive income taxation.

TABLE 19-3

Percentage Increase in Real Income before Taxes by Quintiles, 1935–1950

| Income Group | Percent Increase |
|---|---|
| Lowest | 78 |
| Second | 81 |
| Third | 75 |
| Fourth | 62 |
| Highest | 34 |
| Total | 52 |
| Top 5 percent | 17 |

SOURCE: Selma Goldsmith and Others, *Review of Economics and Statistics*, February, 1954, Table 5.

### The Impact of Progressive Taxation

The increase in equality is, of course, even greater when the effect of progressive taxation is taken into account. Suppose that in 1880 the bottom 95 percent in the United States received the same 54 percent Kuznets estimates they received at that time in Great Britain, and that taxation in 1880 was neutral—neither progressive nor regressive. We just noted that in 1950 the bottom 95 percent received 83 percent of aftertax income, so that, if the assumptions just made are correct, their receipts over the seventy-year period would have risen by 54 percent (83 divided by 54)—in contrast to a 41 percent rise in income before tax.

We also just noted that, if everyone were limited to 2.5 times average income, the bottom 95 percent would receive 89 percent of aftertax income. Compared with 1880, this would give an increase of 65 percent (89 divided by 54). Thus, broadly, of the benefit to the bottom 95 percent that would have resulted from altering the 1880 income distribution so that no one received more than 2.5 times average income after taxes, it appears that 83 percent (65 divided by 54) has already been attained —say, in round numbers, four fifths of the total change at issue.

Moreover, although the relative increase in the lower brackets has been consistently larger even before taxes, it has again been even more pronounced when the impact of taxes is taken into account, as Table 19-4 makes clear. Note that real aftertax income of the top 5 percent actually declined by 2 percent while income as a whole rose by 17 percent and income of the lowest quintile by 42 percent.

TABLE 19-4

**Percentage Increase in Real Income after Taxes by Quintiles, 1941–1950**

| Income Group | Percent Increase |
|---|---|
| Lowest | 42 |
| Second | 37 |
| Third | 24 |
| Fourth | 16 |
| Highest | 8 |
| Total | 17 |
| Top 5 percent | −2 |

SOURCE: Selma Goldsmith and Others, *Review of Economics and Statistics*, February, 1954, Table 14.

### Personal versus National Income

What has brought about so marked an alteration in the distribution of income? The change has been too recent for all the factors at work to be understood, but some of the influences are clear. Recall that the statistics presented deal with the distribution of *personal* rather than *national* income. Personal income, which is the sum of the *funds actually available* to spending units, includes interest paid by the government, a variety of transfer payments, and the dividends actually received by stockholders, but excludes both taxes on corporate profits and earnings retained by corporations. For a number of reasons in recent years personal income has come to be more equally distributed than national income. Thus corporate profits as a whole were 11.5 percent of income in 1929 and 10.6 percent in 1960, but dividends were 6.6 percent of income in 1929 and only 3.4 percent in 1960. Again net transfers (total transfer payments less personal contributions to such payments) increased from 1.5 percent of national income in 1929 to 4.7 percent in 1960. The increasing importance of such payments, which go to those in the lower brackets (with old-age benefits tending to go to those at the very bottom of the scale), is an important part of the explanation of the relatively rapid rise in lower-bracket personal income.

### Some Long-Term Factors Making for Equality

In addition to short-term influences, some long-term factors making for equality appear to have been at work. Actually in a relatively stable and static economy an *increase* in inequality might well occur. For only those in the higher income brackets save on balance much of their income, with the top 5 percent of spending units probably providing two thirds of all net saving and the second 5 percent practically all the rest. (This, of course, does not mean that individuals among the bottom 90 percent of spending units do not save; it merely means that, on balance, their saving is offset by the dissaving of others.) Why does not more and more property—and therefore more and more income—come to belong to those who do the saving? This is an aspect of what Marx had in mind when he prophesied that the rich would get steadily richer until revolution was inevitable. But if the cumulative impact of concentrated saving is to lead to increasing income inequality, the same families must continue to receive high incomes for long periods on an essentially hereditary basis. Because talent varies greatly from generation to generation, property income based on well-established property rights that can be maintained with little ability would appear to be essential—as, for example, the right to draw income from land managed by tenant farmers. It may well be that the cumulative impact of property incomes in the relatively stable past goes far toward explaining the high degree of concentration that appears to have existed when estimates first became available, and also the concentration in underdeveloped areas, which have, of course, been relatively stable. It is even possible—though by no means certain—that inequality increases as development starts if a few wealthy industrial families emerge without destroying the economic basis of previous wealth.

Obviously under any circumstances inequality cannot increase indefinitely if the economy is to remain viable—which was Marx's point. What he failed to foresee was that, as economies develop, many influences emerge that tend to reduce concentration. The rise and decline of industries in the course of development tend to change completely the families in the top brackets. Perhaps shirt sleeves to shirt sleeves in three generations exaggerates reality, but mobility at the top due to shifts from one industry to another as development progresses is clearly relatively rapid.[3] Hence even property incomes are unlikely to remain heavily concentrated. In addition, development appears to increase the compensation for personal ability compared with property. Recall the sharp decline in the importance of property incomes discussed in the preceding chapter; today a surprisingly large part of the income of those with high incomes is compensation for current labor. But to this extent it is compensation that cannot be passed by a father to his children. In short, in a developing economy a high income is likely to result from the combination of an able man in a growth industry. But not only will he be unable to pass to his children his labor income; in addition, the very changes that are a part of growth are likely to reduce the value of such property income as they in fact inherit, so that there is no direction for their incomes to go, relatively at least, except downward. Hence once development starts, there may be a cumulative tendency toward greater equality.

## Some Recent Social and Political Influences

Political influences in recent years have certainly intensified the tendency toward equality. Progressive income taxes have made the accumulation of property more difficult, while gift and inheritance taxes have to some extent reduced the amount that can be transmitted to a subsequent generation. Again, inflation has eroded the purchasing power of inherited wealth placed in trust funds and fixed-interest securities, and there has been a significant overall reduction in the social acceptance of large incomes and lavish spending. Further, there may well be an important range over which compensation of corporate executives is determined "administratively" rather than by competitive forces; to the extent that this is true, social pressures may tend to retard the increase in executive compensation. In any event, the progressiveness of the present income tax makes high salaries of relatively limited value, and this in turn depresses salaries down the line if appropriate differentials are to be preserved. And both these influences, working in the first instance on scales within corporations, tend ultimately to reduce competitive pressures by reducing the offers that firms can make to attract outsiders without disrupting internal morale.

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[3] Of the 100 largest corporations in 1909, only 36 were among the 100 largest corporations in 1948. In the later years, 5 of the top 10 were not included in the 1909 list.

Obviously, if this list of factors making for equality gives the impression that there are no rich people left in the United States, it has overstated the situation; large fortunes continue to be made. But fifty years ago, when Rockefeller was making his millions, the national income in current prices was less than 10 percent of what it is today. Relatively at least, we have far fewer Rockefellers today.

One result of high taxes and the social restraints on high corporate salaries is that corporations have turned increasingly to such devices as stock options, pension arrangements, capital gains, and expense accounts to provide compensation less subject to taxation. We shall therefore want to examine in Chapter 20 the importance of these forms of compensation and the degree to which their existence requires a modification of our conclusions regarding the extent of possible redistribution.

### Redistribution to Those with Lowest Incomes

Despite the increase in equality that has occurred, would not a further increase be desirable in the incomes of the bottom fifth of income recipients who received less than 5 percent of personal income or the 14 percent of spending units that had incomes of less than $2,000 in 1959? Obviously, the $31.5 billion of income before taxes or saving that would be available if everyone were cut back to $15,000 would bring a major change in the situation if it were redistributed entirely to those at the bottom of the income scale. Undoubtedly further improvements in the living levels of those at the bottom of the scale are desirable, but an examination of the spending units involved will show that the matter is both less urgent and more complicated than may appear.

First, in 1959 less than 6 percent of nonfarm families had incomes of less than $2,000 in contrast to 27 percent of farm families and 38 percent of unattached individuals.[4] Again, of all those with incomes of less than $2,000, 53 percent were unattached individuals, 31 percent nonfarm families, and 16 percent farm families. As Chapter 25, which deals with agriculture, makes clear, those with very low incomes in farming are tenant or subsistence farmers who produce a minuscule part of marketed crops. But moving such individuals from the Ozarks or the Appalachian Mountains is far more than a question of providing alternative employment opportunities; rather, it involves inducing the acceptance of a whole new way of life.

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[4] A considerable part of the marked difference in money incomes between farm and nonfarm families is the result of undervaluation of the food grown and consumed by farmers, which is valued at its farm rather than its retail price.

Second, an increasing portion of those with low incomes, in the case of both unattached individuals and nonfarm families, consists of retired people who are able to live separately in large part as a result of the social security program. This can be seen from the fact that between 1935 and 1948 the percentage of the lowest fifth of spending units over sixty-five years of age rose from 14 to 25 percent and may well be 30 percent or more at the present time. But a retired couple receiving $100 a month in social security benefits and interest at 3.5 percent on $20,000 of saving has an income of less than $2,000. Nor are situations of this sort unusual; the impact of those who have retired has made property incomes more important in the lowest income bracket than in any other bracket except the highest. On any possible appraisal of need, however, it is obvious that the retired couple may be better off than a young family, without assets and with three or four children, whose income is twice as high. Again, a newly established family in which the wife is working to help support her husband while he completes his education may turn up in a very low income bracket even if help from their families renders their need negligible; the decreasing age of marriage and the increasing time devoted to education may soon make this possibility statistically important. Further, the increasing ability of widows to live alone as a result of the social security program and, to a smaller extent, the increasing tendency of young women to live apart from relatives while supporting themselves before marriage help to explain the low incomes received by unattached individuals; in fact, these influences were sufficiently strong to cause the inequality of income distribution to unattached individuals to *increase* in recent years. Incomes that in both these cases might be quite satisfactory could be quite unsatisfactory if the unattached individual was obligated to support a mother who had not qualified for social security or a divorced wife and children.

In short, the problem raised by low incomes is really not a matter of income distribution in the sense that it cannot be solved simply by raising the incomes of all those in the bottom fifth of spending units or all who receive less than a specified minimum, such as $2,000. Many below that figure may be getting along relatively well; many above it relatively badly. A woman with several children who has been widowed, divorced, or deserted, or whose husband has become physically disabled, will not be aided by general redistribution. Quite complicated measures of the sort involved in our social security and welfare programs are required if we wish to guarantee any given minimum standard of living to those at the lower end of the income scale. Even the more general measures that might be desirable—such as the development of sources of revenue to finance local governments that would place far less of a burden on those with low incomes than does the now widely used property tax—will not be easy to achieve. This does not, of course, mean that more should not be done; but it is essential that, if more is to be achieved, the nature of the difficulties to be overcome be understood.

# 20 Personal Distribution—Desirable Changes

## The Case for Equality in Income Distribution

When demand was discussed in Chapter 10, it was pointed out that, within a given time period and with tastes unchanged, a buyer is generally likely to be willing to offer only decreasing prices for additional amounts of any commodity. Presumably the reason is that he receives "diminishing marginal utility"—less additional benefit—from increasing quantities. In the case of a specific commodity the obvious reason for rapidly decreasing willingness to buy *one* product is the desire to buy *other* products. But it seems equally possible that, the more a man has of *everything,* the less utility he is likely to receive from marginal additions; starting from any given level, it can be argued that five equal additions to a man's income might yield utility, somehow measured, of 10, 8, 6, 4, and 2 units. Carrying this line of reasoning further, it seems to follow that the more equally an economy's income is distributed among its members, the larger will be the total utility they will receive. For the utility derived by a man with greater than average income from the last 10 percent of his income would appear to be less than the utility that the same income would yield if transferred to a man with less than average income.

Actually both conclusions depend on assumptions that are incapable of proof. The first conclusion regarding the individual must imply that his capacity for enjoying utility is unchanged, just as his tastes must be unchanged when the demand curve for an individual commodity is drawn. Clearly the longer the time period with which we are concerned, the greater is the likelihood that even the same individual will develop greater capacities for enjoyment, thereby offsetting any tendency for additional amounts of real income to yield less utility.

Second, equal distribution of income will maximize total utility only if a given amount of real income yields the same utility when received by different people. This involves what economists call "interpersonal comparisons of utility." Unfortunately there is no way in which such comparisons can be made, and therefore no way of denying the *possibility* that unequal distribution of income will maximize total utility if those with larger than average incomes are also better than average "pleasure machines."

There is, in short, no way of demonstrating scientifically the desirability of equality. It is, on the other hand, quite obvious that in a democracy there is unlikely to be any general acceptance of the argument that there are wide divergencies in the capacity of people to enjoy utility from a given quantity of real income. It seems fair to summarize the discussion thus far as suggesting that there is a general *presumption* in favor of equality in a democracy.

### The Case for Inequality—Saving

What are the objections to equal distribution of income? There are two main arguments for inequality: that it is necessary to induce saving, and that it is necessary to provide incentives. Each of these arguments is worth examining with some care.

Recall that the top 5 percent of spending units accounts for perhaps two thirds and the top 10 percent for almost all personal saving. Is not inequality necessary if saving is to be forthcoming? Let us first see what is involved quantitatively. In Chapter 17 it was pointed out that corporate saving and saving by the government, between them, are responsible for 40 percent of net saving and that the liberality of depreciation allowances has an important bearing on the need for net saving. Hence, even though personal saving has been responsible for 60 percent of net saving, it is obviously not the only element in the picture.

Moreover, personal saving in recent years has amounted to only around 6 percent of the national income. To see what is involved, let us examine 1950 more closely. In that year those with incomes over $7,500 constituted 11.5 percent of all spending units and were probably responsible for practically all the net personal saving that was realized. The total income of those with more than $7,500 in that year was $71.5 billion, or about one third of total personal income. Of this total $11 billion was paid in taxes, leaving $60.5 billion, of which $12.5 billion was saved and $48 billion spent on consumption. In other words, only 21 percent of aftertax income was saved; the rest was consumed. If more income had gone to those in the top income brackets, the percentage of the additional income saved might well have been significantly higher, but it is most unlikely to run over 50 percent for any length of time. To induce saving by increasing the inequality of income distribution, therefore, involves giving the top brackets at least $2 for every $1 they can be expected to save and perhaps considerably more; hence, to say the least, this method of ensuring saving appears rather wasteful. It follows that a case can be made for inequality as necessary to ensure an adequate supply of saving only if no effective alternative methods of obtaining saving are available. But in view of the possibilities inherent in liberalizing depreciation allowances, encouraging corporate saving, and providing funds for investment by having the government run a surplus and retire a part of its outstanding debt, effective alternatives do seem available in most developed economies.[1]

Though stronger, the case for inequality to provide saving in underdeveloped areas is at least debatable. Note that in most such areas income is usually more unequally distributed than in developed economies; yet very little saving is forthcoming. A major reason for this may be the extent to which saving in the West depends on the existence of a Puritan tradition. Where such a tradition does not exist, even extreme inequality may produce little saving. Under such circumstances government intervention may well be practically impossible to avoid if development is in fact to occur.

### The Case for Inequality—Incentives

To what extent is inequality necessary to provide incentives to induce people to work both hard and effectively? Motivation is so complex and little understood that no easy answer is possible. Certainly there are many business leaders today who are motivated by the desire for power, the creative satisfaction that goes with building up a company, the general prestige accorded successful executives, and a host of other reasons apart from making more money. But most people we think of in this connection have in fact substantial incomes. In discussing redistribution in the last chapter, we took 2.5 times average income as our standard—perhaps $15,000 in relation to an average of $6,000 and a full-time minimum of perhaps $2,000. If the range of income distribution were no wider than this, it seems likely that there would be serious repercussions both on the economizing process and, more important, on the rate of economic development.

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[1] The conditions under which a government surplus may be used to add to the supply of saving were stated in Chapter 17 and will be discussed more fully in Chapter 34.

Perhaps the first point to stress is that effective management is important. Military history abounds in examples of inferior forces led to victory by superior generalship. So also does business history. To give but one example, the market conditions that faced Henry Ford, in terms of supplies of land, labor, and capital as well as demand for his product, were not appreciably different from those facing a thousand others who tried to manufacture cars. The difference was that Ford made certain decisions, both in regard to the organization of production and the characteristics of the product, that were unique. One result was that Ford became rich; but the social result was that cars became available that were better and cheaper than would otherwise have been on the market.

Would the same have been true if the rewards had been very much smaller? Over a wide range the answer may well be yes: undoubtedly Ford enjoyed building cars. But effective management involves hard work. Studies of the actual hours worked by executives indicate that a fifty- to sixty-hour week is common. Unless real rewards are forthcoming, it is doubtful whether many would be willing to continue to work so hard. Recall that less than 5 percent of spending units today have incomes over $15,000. Suppose a man in the ablest 5 percent of those engaged in business achieves an income of $12,000 by the time he is thirty. Today, if he continues to work hard and effectively, he has the possibility of reaching the $50,000-to-$100,000 level and the probability of reaching $25,000—and thereby achieving a major change in both his level of living and the provision that he will be able to make for his wife and children. If, on the other hand, the maximum that he can hope for is $15,000 to $18,000—especially if taxation is progressive—obviously no noticeable change in his level of living is in prospect no matter what he does. Under such circumstances it seems likely that the appeal of routine jobs without responsibility but with a major increase in leisure will be very great indeed.

### Natural Abilities versus Acquired Skills

Note the argument has thus far been stated in a way that applies to business executives like Ford, who have abilities that are "natural" and not the result of training. To the extent that abilities or skills are "natural" they do not have a cost of production and their compensation is in the nature of a "rent" based on relative scarcity—just as is the compensation of natural resources. It follows, therefore, that a reduction in differentials should not, at one level of analysis, have any effect on the allocation of able people—just as taxation of economic rent would not alter the use to which natural resources are put. But people differ from resources in one important regard: they do not have to make their full abilities available unless they feel the game is worth the candle. Thus the case for large rewards for natural abilities rests essentially on the necessity of such rewards in order to induce the socially desirable amount of effort—both in terms of hours worked and intensity of work done. Moreover, although resources presumably do not object to being used in the alternatives that maximize their rent, and therefore will be so used even if their earnings are subject to heavy taxation, people may well refuse to shift—because they do not like the job itself or the place where it has to be performed—if differentials are reduced by taxation.

The case for inequality becomes even stronger when recognition is given to the fact that much of the income received by those in the higher brackets is received by those with skills that are *costly to acquire*. In general, for example, it seems unlikely that people will undergo the rigorous and expensive training necessary to become doctors unless they can look forward to significantly higher income than they can obtain without study. To this, as we saw in connection with the supply of labor, there may be individual exceptions: some people may have so strong a preference for a particular occupation—as, for example, teaching—that they may undergo costly training even with the prospect that they will thereafter earn less than they might have made without training. But many, if not most, of the skills required in a modern industrialized economy do not offer the sort of rewards that accompany teaching. On balance, therefore, it seems probable that necessary skills will not be acquired unless they are rewarded by significantly larger incomes than would otherwise be available. In fact, it is doubtful whether there are any instances in which industrialization has been successfully accomplished without significant differentials for a wide variety of workers ranging from skilled labor and foremen to business managers and executives.

### Evidence from Russia

It is always possible that "human nature" may change, and thus reduce the need for material incentives. Rarely is one likely to find more propitious circumstances for a reduction in the importance of such incentives than in the wake of a revolution such as the triumph of Communism represented in Russia. As already mentioned, an effort was, in fact, made, for a few years after the revolution, to give all members of the Communist party—who represented a small and elite group—the same income. But, as soon as rapid industrialization was started under the First Five Year Plan in 1928, even this limited effort was abandoned and the Communist slogan of "From each according to his abilities, to each according to his *needs*" was revised to read "From each according to his abilities, to each according to his *production*."

It is difficult to compare the present Russian distribution of income with that in the United States. Part of the difficulty is that the Russians have not made much information available on the actual distribution, but, in addition, Russians in positions of responsibility receive a great many benefits—ranging from cars to summer homes and even servants in such homes—that are paid for by the government rather than by the individual. The phenomenon is not confined to the Soviet Union; we have "expense accounts"—shortly to be examined more fully—and the British, under the impact of highly progressive taxation, are very much interested in "perks"—short for tax-free perquisites. But all the evidence is that such benefits are used far more widely in the Soviet Union than elsewhere. There are two additional difficulties. Because inequality in the Soviet Union was deliberately created to provide incentives, it is not offset by progressive taxation; the highest tax rate, for all except special groups such as peasants, is lower than the lowest rate of our federal income tax. In addition, though personal saving is permitted in the Soviet Union, it is much less important than in the United States. As a result the distribution of income in the Soviet Union probably corresponds much more closely to the distribution of consumption than is true in the United States.

We have already suggested that the distribution of consumption offers the best general measure of current benefit. Were it possible to obtain such a distribution, including benefits received from the government, it seems quite likely that the inequality in the Soviet Union would be found to be significantly greater than that in the United States. It is worth repeating that Soviet inequality is not the result of market forces but has been deliberately created as a matter of social policy and is not reduced to any important extent by progressive taxation. One possible interpretation of the Soviet situation is that a "new class" has arisen that is "exploiting" the masses as a result of its power over the government rather than through the ownership of property. There may well be an element of truth in this charge. But it seems far closer to the mark to interpret what has happened as involving recognition of the necessity for considerable inequality if adequate incentives are to be provided to induce able people to work hard and effectively.

## Redistribution in the United States

Does this mean that the present distribution in the United States is too equal? Probably most economists would argue in the negative. Part of the reason that the Soviet Union has needed considerable inequality is that it has used penalties for failure—negative incentives—rather widely. If failure involves a trip to Siberia rather than to the bankruptcy court, the rewards may well have to be quite high to induce people to assume responsibility. Moreover and more directly, studies of the impact of taxation on American executives have generally concluded that progressive taxation has thus far not induced them to work less hard or less effectively than in the past.

It is even quite conceivable that somewhat greater equality will be found possible in the future without repercussions on incentives. But if we concentrate on actual income rather than on the "fringe benefits" to which we are about to turn, it seems important to stress again that the benefits of further redistribution are relatively small—10 percent for income as a whole, 7 percent when allowance is made for progressive taxation, and perhaps 4.5 percent when allowance is made for both taxes and saving. Hence, if further redistribution were to have repercussions on the economizing process or, even more important, on economic development, we would in fact be killing the goose that lays the golden egg.

### Equality versus Development

Is it possible to get some indication of the relative importance of equality and development? In a different connection Table 31-1 presents estimates that show that a 6 percent initial decline in income would be offset in thirty-two years if it caused real income per man-hour to increase at 2 rather than 1.8 percent, in eleven years if the increase were 2.2 rather than 1.6 percent, and in seven years if the increase were 2.4 rather than 1.4 percent. Similarly, if a 6 percent redistribution of income were to slow economic development by as little as the difference between 1.8 and 2.0 percent a year, even those who initially benefited from the redistribution would be no better off after thirty-two years and would be increasingly less well off thereafter. Reversing the example, suppose we reduced everyone's income by 6 percent to obtain an "incentive fund." If, as a result of such a fund, the rate of development were 2.0 percent rather than 1.8 percent, then even those who received nothing from the fund would after thirty-two years be as well off as if no reduction had taken place, and they would be increasingly well off thereafter. Moreover, if the fund resulted in a 2.4 rather than a 1.4 percent rate of development, the relative reduction of those who received nothing from the fund would last for no more than seven years. It seems clear from these examples that, if greater equality were in fact to slow down economic development, its benefit would quite rapidly be offset by the slower rate of development.

To sum up, *any conceivable further redistribution of income from those at the top of the scale cannot possibly make most of us much richer, but it could, even over quite short periods, make us considerably poorer if it were to slow down our rate of economic development.*

### The Significance of Expense Accounts

Does the existence of expense accounts require modification of this conclusion? Technically they represent reimbursement by a firm for expenses incurred in activities of benefit to the firm, but in recent years they have undoubtedly often been used to provide executives with compensation not subject to income taxation. The problem is troublesome if only because the impact is highly erratic. In many cases, to prevent abuses, firms have worked out procedures to make sure that only expenses of direct and obvious benefit to the firm are incurred. Here the main harm is likely to be the impact on the individual of rich luncheons and routine dinners. But where a firm is able to charge the expenses of a yacht or a shooting lodge to "entertainment," when these are used primarily for the benefit of executives or owners, real income is in fact being made available that is not subject to taxation and where the benefit to the firm may be quite remote.

Efforts to tighten expense account procedures certainly seem desirable, but it would be easy to overestimate the quantitative importance of what is involved. President Kennedy, when he proposed early in 1961 that the tax deductibility of expense accounts be greatly curtailed, estimated the resulting increase in the government's revenues at only $250 million. This suggests that the expenses now deductible, which he would like to subject to the 50 percent corporate profits tax, amount to around $500 million. Even if he did not expect that all expenses would be disallowed and even if the estimate of additional revenues assumes that disallowance would eliminate many current expense accounts, it seems clear that the present total is relatively small. Hence, although expense accounts represent a qualification of our conclusion regarding redistribution, it is clearly not of major *quantitative* importance.

### The Significance of Capital Gains

A "capital gain" is the increase and a "capital loss" the decrease in the value of an asset. When a gain is realized by the sale of the asset, half the gain is taxed as income by the federal income tax with the limitation that the tax on gains shall not be more than 25 percent of total gains realized in any year.[2] It is obvious that a man in the higher tax brackets will want to arrange his affairs so as to realize capital gains rather than fully taxable income. When a man has property to start with, this can be done by investing in assets that offer little or no current return but appear likely to appreciate in value in the future. Even without property, stock options can sometimes be used to convert income into capital gains, while pension arrangements can often be made that in effect defer compensation to a time when the individual will be subject to much lower rates of taxation.[3]

The pursuit of capital gains undoubtedly makes funds available for new and potentially growing industries in a way likely to encourage economic development. Again, the fact that stock options become valuable only if the stock appreciates provides management with an incentive for effective performance. More generally, people in the higher income brackets should obviously be the main source of capital for risky investments. Without exploring all aspects of the matter, it seems fair to conclude that some limitation of the rate of taxation of capital gains is essential if those in the higher income brackets are not to become "frozen" in assets that have appreciated and therefore unable to provide the risk capital the economy needs.

But does not the availability of these sorts of arrangements require a qualification of our conclusion regarding income distribution? Again the answer is, not to any important extent. Recall that those at the top of the income scale, on balance, save a part of their income. This means that on balance they are *adding to their assets*. That those involved frequently own appreciating assets that can be realized at relatively little cost in taxes is undoubtedly a factor in explaining why the top 11.5 percent of spending units in 1950 consumed 79 percent of their aftertax income. But there is no way in which they can take advantage of the availability of capital gains *without increasing the percentage of their income that would be reported as having been consumed.* Hence, when we dealt with the actual amount of consumption, we were in effect allowing for the *actual current impact* of the availability of capital gains. Besides their current impact, capital gains and stock options may make it easier to convert current services into inheritable property. This aspect of the matter, however, is actually a part of the general problem of inheritance, and can best be considered in connection with inheritance.

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[2] The entire gain is subject to tax if the asset has been held less than six months. Technically all assets including consumer goods are subject to tax, but in practice the tax applies mainly to earning assets and to real estate.

[3] If the stock under a stock option is offered at less than its market price, the difference is taxable as income. Hence the option offers partially exempt compensation only if the price of the stock rises after the arrangement is entered into.

### The Significance of Inheritance

Does the existence of inheritance require qualification of our conclusion regarding redistribution? In part the answer is affirmative. To those receiving high incomes as a result of inheritance, the "incentive fund" we just discussed may be an incentive, not for hard work, but for lying idly in the sun! Because only property income can be inherited, however, the sharp decline in the importance of property incomes in recent years has much reduced the quantitative importance of the problem.

What case can be made for continuing to permit inheritance? First, there is no doubt that the possibility of providing for his wife and children induces an able man to work longer and harder than he would if his claim to income terminated with his death. (Undoubtedly recognition of the incentive effect helps to explain why it is that the Soviet Union has reinstated limited inheritance.) Second, and even more basic, a system of private ownership of property must provide a way of ensuring that, from generation to generation, property continues to be privately owned. In practice, we shall see that this aspect of the matter becomes a question of how far it is possible to push inheritance taxation without having undesirable repercussions on the rate of saving.

On the other hand, inheritance permits people to receive a slice of the national income for no other reason than the care they exercised in choosing their parents or grandparents. Moreover, though by no means always true, it seems likely that a considerable inheritance is *in general* likely to induce those benefiting to work less hard than they otherwise would. The matter is one about which it is not easy to generalize because much depends upon noneconomic factors. There may be cases where the inheritance of property carries with it the acceptance of social obligations that lead to harder work than otherwise; but such cases appear rather more likely to be the exception than the rule.

The practical problem is whether more can be done by taxation of inheritance. At present both rates and yields are quite low. In addition, a married man, with his wife's consent, may give away during his lifetime $60,000, plus $6,000 a year to each of an unlimited number of recipients. Hence a married man with three sons, three daughters-in-law, and six grandchildren can give to them, without being subject to taxation, $132,000 in the first year and $72,000 annually thereafter, for a total of $1 million in thirteen years. Further, gifts in excess of the exemptions are taxed at only three quarters of the rate of the inheritance tax. Finally, the gift and inheritance taxes are levied independently, so that, if half of a $1 million estate is given away before death and the other half is inherited, the maximum rate assessed will be that applying to an estate of $500,000.

Can more be done? Gift and inheritance taxes are generally met by selling a part of the assets involved. Hence they in effect take funds from the capital market to meet current government expenses. It would be desirable, therefore, for the proceeds of the gift and inheritance taxes, especially if they were to be increased, to be earmarked for the retirement of the federal debt, thereby making sure that the capital markets received back the funds that were removed. If this were done, rates might well be increased and the gift and inheritance taxes made jointly progressive. Further, even if the present individual exemption is not lowered for administrative reasons, a limit might well be placed on the total amount that can be given away in any year. Ideally there should be heavier taxations of sums a man had inherited compared with those he had saved—partly to give those who inherit wealth an incentive to increase it and partly because making it more difficult for a man to provide for his grandchildren is unlikely to have noticeable repercussions on his current willingness to work. But it seems probable that the necessary administrative arrangements to achieve this objective will prove to be difficult, if not impossible, to work out.

There remains the possibility of assessing capital gains on all appreciated assets at the time of a man's death. At present, when a man dies, any obligation to pay capital gains on the appreciated assets he holds is eliminated. There is little doubt that this "freezes" the assets held by elderly people, who have a clear incentive to allow appreciated assets to pass into their estates so as to avoid having to pay capital gains. If, instead of the present arrangement, both capital gains and inheritance taxes were assessed at the time of death, the change would substantially eliminate the present "freezing" of appreciated assets. The main objection to the proposal is that capital gains assessed against an estate will almost certainly be paid out of capital, whereas those assessed from year to year are more likely to be paid out of income. As before, if the gains assessed specifically against estates could be segregated and used to retire the federal debt, this objection would appear to have been met. Under such circumstances, assessment of both capital gains and inheritance taxes on assets of estates would appear to have considerable merit.

# 21

# Labor Unions and Distribution

## The Historical Background

This chapter is concerned with the economic impact of labor unions, and especially their effect on the distribution of income. Modern unionism dates from the establishment of the American Federation of Labor in 1881, but for more than fifty years the movement was confined overwhelmingly to a few skilled crafts or quite distinct occupations, such as the building trades, railroading, or coal mining. Despite a temporary rise during World War I, only 3 million workers, amounting to around 6 percent of the labor force, were unionized in 1933; it was the National Industrial Recovery Act in that year which led to the emergence of the labor movement as we know it today. At present around 18 million workers are organized, or about 25 percent of the labor force. In fact, if we deduct, from the total labor force, farmers, the self-employed, government employees, professional groups, and the like, perhaps a third of those who are "organizable" are currently members of labor unions. In short, it seems quite unlikely that the union movement had much of an overall impact on the economy before 1933 and quite likely that it has had such an impact since then.

## What Unions Do

The activities of organizations with 18 million members cannot be briefly summarized. Unions are active in politics, attempting to elect candidates favorable to their interests as they see them; they attempt to influence public opinion, both by running newspapers and by issuing many other kinds of publicity; and they have a long history of providing help for their members in need. As we are concerned primarily with the economic impact of unions, political activities and mutual aid are of least concern to us. Of major interest is the fact that unions bargain collectively with a single employer, a group of employers, or all the employers in an industry. Broadly, unions have two objectives: they seek, first, direct benefits for their members in the form of higher wages or shorter hours; and, second, increased security—through systems of seniority, protection against dismissal except for just cause, and a variety of "fringe benefits" that provide help in the event of unemployment, sickness, or retirement.

### The Effects of Union Activities

All aspects of the economic process are affected by the activities of unions. But, as this section deals with economizing, we shall concentrate in this chapter primarily on the impact of unions on the distribution of real or relative income and the resulting allocation of the labor supply. Unions also influence economic fluctuations and, especially through their efforts to achieve greater security, the rate of economic development. To round out the discussion, the probable impact of unions in both respects will be discussed in the concluding sections of this chapter. An important matter that will not be considered at this time is the extent to which unions are responsible for inflation; this subject appears sufficiently important to justify separate consideration at some length in Chapters 51 and 52.

Note that our proposed discussion concentrates on the economic effects of the union movement. It is worth stressing that the desirability or undesirability of unions cannot be determined on economic grounds alone. Even if unions had no economic effects or clearly undesirable economic effects, unions might still be justified for noneconomic reasons. Thus the discussion of this chapter does not provide the basis for an overall appraisal of the union movement as a whole.

### Collective Bargaining and Monopoly

Since 1933, and especially since the Wagner Act of 1935, it has been an "unfair labor practice" for an employer to interfere in any way with the efforts of his employees to establish a union. Where a union is able to demonstrate in an election held under the auspices of the National Labor Relations Board that the majority of the members of an appropriate bargaining unit wish a union to act as its representative, then it becomes an "unfair labor practice" for the employer not to bargain collectively with that union. The union is authorized to back up its demands by striking, picketing the plants of the employer, and boycotting his products. In theory a union does not have a monopoly over the jobs of an employer even when chosen to represent his workers. Provided an employer has not engaged in "unfair labor practices," he is free to replace the workers who went on strike against the wages he offers by other workers who are willing to work at such wages.

In practice, however, at the present time unions do have a monopoly in the sense that in most cases no effort is in fact made to operate a struck plant. One reason for this is that unions are often prepared to use violence to prevent "scabs"—either new workers or those previously employed who disapprove of the strike—from taking away the jobs of those on strike. One way in which this can be done is to picket in such numbers that entrance to the plant is dangerous or impossible. Mass picketing is technically illegal and can be enjoined by the courts, but many employers and most of the general public dislike the idea of industrial disputes degenerating into trials by combat. Thus, except where the union is unrepresentative or its demands are extreme, there is likely to be little general sympathy today with efforts to run a plant once a strike has been called.

Where no effort is made to run the plant and replace those on strike, the union has attained what is in effect a monopoly over the jobs in question. Keep in mind that possession of a monopoly does not necessarily permit the monopolist to charge a monopoly price for his product. Recall that we issue thousands of rights to monopolize every year in the form of patents; most are worthless because people are unwilling to pay even the cost of production of the patented product, let alone a monopoly price in excess of production cost. In the same way a union, even though it monopolizes the supply of labor to a particular use, may have quite limited power to raise wages; where, for example, an employer is in a position to close down his plant and manufacture his product elsewhere, the union may be quite unable to demand wages higher than the competitive level.

In fact, strikes, though spectacular, are not quantitatively particularly important. What an uncontested strike does is to substitute a trial by attrition for a trial by combat. Although workers are generally less able to survive such a trial than employers, both are likely to suffer severely. As a result, strikes are relatively rare; with the exception of 1946, when there was an acute struggle over the extent to which basic postwar wages were to reflect wartime overtime, less than half of 1 percent of the total possible working time of all workers has been lost during the postwar period as a result of strikes.

## Union Monopoly and Income Distribution

In short, the essence of our present situation is that the wages of perhaps a third of those who are "organizable" are being established in markets marked by bilateral bargaining between buyers and sellers, both of whom possess *some degree* of monopoly power. Keep in mind that we are not now interested in the impact of this situation on *money* wages; rather, we are concerned entirely with the effect of such bargaining on *real or relative* wages. What we want particularly to examine is the possibility that the monopoly power possessed by unions will permit them to attain for their members a greater share of current production—thereby altering the distribution of real income so as to favor those who have been unionized.

Where bilateral bargaining prevails, there is no general way in which the results of such bargaining can be predicted theoretically; over a considerable range they are "indeterminate" in the sense that they depend on the particular set of circumstances to be found in the case under discussion. To throw light on the matter, numerous empirical studies have been made of the relative behavior of union and nonunion wages; by far their most noteworthy result has been to demonstrate the difficulty of establishing significant differences in behavior. There is no difficulty in finding individual examples to prove whatever one wishes to prove. Any number of specific areas of unionization have had wage increases that were faster than those of many unorganized workers, but the wages of completely unorganized domestic servants have probably risen even faster than those of most unionized workers.

There is some evidence that immediately after unionization wages rise somewhat more rapidly than they do where workers have long been unionized or are ununionized. But the overall conclusion of Albert E. Rees, a leading student of labor economics, is as follows: "To summarize this work in a series of rough guesses, I would say that perhaps a third of the trade unions have raised the wages of their members by 15 per cent to 20 per cent above what they might be in a nonunion situation; another third by perhaps 5 to 10 per cent, and the remaining third not at all."[1]

Suppose we accept Rees' guesses as correct and further assume, which he did not, that higher wages come entirely from profits or other property income. What, then, would be the effect of unionization on the overall distribution of income? Suppose it were possible, in the absence of unions, to divide all those receiving labor income into twelve groups each of which received 7 percent of the national income—so that labor as a whole received 84 percent of income. If three quarters of the labor force is ununionized and a third of unions ineffective in raising wages, then the distribution of ten twelfths of labor income would appear to be unaffected by the existence of unions. Another twelfth of the labor force would receive perhaps 7.525 percent of income ("5 to 10 per cent" more—say, 107.5 percent of the 7 percent they would have received in the absence of unions); and the final twelfth would receive perhaps 8.225 percent of income ("15 per cent to 20 per cent" more—say, 117.5 percent of the 7 percent they would otherwise have received). On this basis the overall impact of unionization would be to raise the share of the total income going to labor from 84 to 85.750 percent.

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[1] National Industrial Conference Board, *Wage Inflation* (New York: 1957), p. 28.

### The Sources of Redistribution

If the amount of redistribution attributed to labor organizations on this basis appears small, the fact is it probably exaggerates what labor unions have accomplished. For we simply *assumed* the redistribution was at the expense of profits or other property income. Actually, a 15 to 20 percent rise in costs is quite unlikely to come out of profits even in the short run, and certainly not likely to be absorbed for any length of time. For even if unions can temporarily restrict the level of profits, capital will flow out of the industry until such time as profits return to a more or less competitive level. If profits or other property incomes cannot be squeezed, it follows that the higher labor incomes achieved by unions will require higher than competitive prices. But Chapter 18 suggested that labor receives 78 percent of income and over 85 percent of consumption; hence most of the price increase will inevitably be paid *by other workers!*

On the other hand, it can be argued that this line of analysis understates the contribution of labor to redistribution on the ground that the existence of unions has reduced profit margins in unorganized areas of the economy. It is not easy to see why this should be so, but it is at least theoretically possible that employers raise wages above, or keep prices below, the competitive level—thereby deliberately reducing their profits—in order to prevent unionization of their workers.

To summarize, there is no easy way of deciding just what impact the exercise of monopoly power by unions in the course of collective bargaining has had on the distribution of income. The basic thing to stress is that it has almost certainly been relatively small. On balance, it seems rather unlikely that the existence of labor unions has redistributed to labor as a whole as much as 1 percent of real income and quite unlikely that the figure is as large as 2 percent. It follows, therefore, that the *overall* impact of labor organizations at the present time on resource allocation must also be small.

### Labor Monopoly and Freedom of Entry

The conclusion just reached does not rule out the possibility that unions have had far greater effects in *specific areas*. Clearly a rise in wages of 15 to 20 percent is not insignificant: Why have unions been able to do so much in concrete cases but so little overall? One answer, of course, is that most labor is not unionized. But there are obviously sharp differences within unionized areas. The clue to what is involved can be provided by recalling that firms are able to obtain continuing monopoly profits only where there are *limitations on entry*. Do unions similarly restrict entry? The answer is not simple. Under the Taft-Hartley Act, passed in 1947, the "closed shop," under which only union members may be hired, was made illegal. It has generally been replaced by the "union shop," under which a man can be employed even if he is not a union member but must agree to become one within a specified period of time if he wishes to continue to be employed. Especially where little in the way of specialized skills or training is required, a union operating under a union shop is likely to be a relatively "open" union in the sense of admitting to membership anyone who wishes to join.

How can a union be "closed" under the Taft-Hartley prohibition of the closed shop? Note, first, that the Taft-Hartley Act does not prohibit a "closed" union in the sense of one which is unwilling to allow additional members to join—or which discourages additional membership by, for example, heavy initiation fees. What happens when an employer tries to operate with a union shop when most of his employees are in a closed union? All sorts of difficulties are likely to arise, having, of course, nothing directly to do with the person the employer wishes to employ but whom the union does not wish to admit to membership! But frequently the difficulties cannot seem to be settled until the employer gives up trying to employ anyone who is not already a member of the union. Moreover, Taft-Hartley does not prevent limitation of the number of apprentices, nor does it prevent a union from insisting—say, in the interest of safety—that its members not be asked to work with anyone who has not become familiar with local conditions by having previously worked locally! The stratagems are many and varied, but the upshot is that many unions have in fact been able to restrict effectively the number of their members to the point at which it is fair to say they are substantially closed.

How important is the difference between an open and a closed union? Theoretically the difference does not appear large. Suppose, as set forth in Figure 21-1, the demand for labor in a particular market is given by the demand curve DD and that under competitive conditions the supply curve would be $S_1S_1$, giving total employment of OX at a wage of OA. Note that, if the union wishes to provide jobs for everyone who would *like* to work in its industry, it has no alternative but to accept a wage of OA—or the wage that would prevail under competition! Only at OA is the attractiveness of the wage in the particular industry in balance with the attractiveness of wages elsewhere. Thus some who might like to enter the industry must be kept out if a union is to achieve wages above the competitive level.

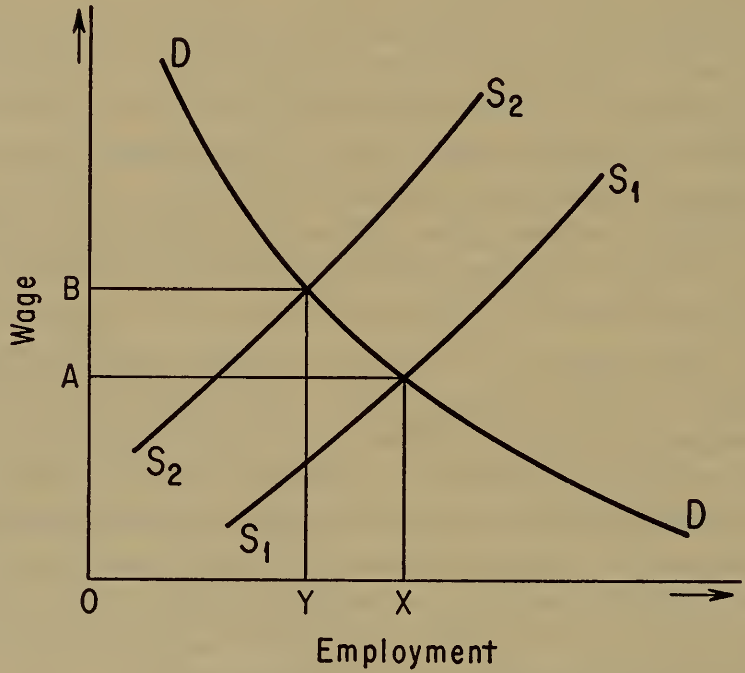

Fig. 21-1. Unions and wage determination.

At first glance it would not appear to make much difference whether a wage of OB had been attained by the union restricting the supply of labor to OY and establishing a new supply curve $S_2S_2$ or by simply getting the employer to agree to pay not less than OB. In both cases actual employment is OY. In the second case, however, there are likely to be workers attached to the industry who are unemployed. If the rise from OA to OB were won suddenly, there would be XY workers unemployed. True *in time* many of those unemployed will shift to other employment if the wage is maintained at the OY level. But many union leaders do not like either to turn away new members or to be unable to provide work for old members. In industries where seniority arrangements are not well developed, the demand is seasonal, and a union shop permits workers with temporary jobs to enter the union, unemployed workers are likely to remain attached to the industry for a considerable time. The impact of such unemployment can be exaggerated; those most likely to be unemployed are least likely to have an influence on union policies. But overall there seems little doubt that closed unions are far more likely than open unions to obtain and maintain wages that are above the competitive level.

### Craft versus Industrial Unions

A craft union represents workers in a particular craft—such as carpenters or bricklayers—without regard to the industry by which they are employed, whereas an industrial union represents the workers of a particular industry without regard to their craft. For many reasons it seems likely that there are far more craft than industrial unions among the third of all unions which Rees felt had been able to raise the wages of their members 15 to 20 percent above the competitive level. First, industrial unions tend to be open unions; some, at least, of the jobs in an industry are likely to be unskilled, so that it is hard for industrial unions to restrict entry. Second, industrial unions are likely to influence so large a part of an industry's costs as to have repercussions on sales if high wages force the industry to charge high prices. Specifically, the recent imports of cars and steel have clearly been of considerable concern to the unions involved. Again it is hard to argue that the average level of skills required is higher in steel than in automobile production; hence, if wages for a whole industry rise faster than the average, the argument that its union is making exorbitant demands is likely to carry considerable conviction. Finally, an industry-wide pattern of wages can rarely be established without becoming widely known—leading to pressure for comparable increases in both union and nonunion areas. As a result, it is quite likely that industrial unions have the greatest impact on *money* wages in the economy as a whole, but far less likely that they obtain *real or relative* wages for their members that are higher than they otherwise would be.

When Marshall, the great British economist, was asked what he would like to monopolize, he replied, "Buttons." Buttons are so small a part of the cost of clothing that the most exorbitant price could be charged—at least in the days before zippers—without noticeably reducing sales. In many cases craft unions are like a single seller of buttons. Payments to their members may be so small a part of the overall cost of the industry that large increases are possible before there are repercussions on prices and sales sufficient to justify risking a strike. Nor can such a union be easily blamed for the loss of competitive position by the industry which employs its members. Further, because specialized skills are involved, operation as a closed union is relatively easy. Again comparisons between specific skills are complicated, so that it is difficult to be certain that the demands of, say, tool- and diemakers are necessarily exorbitant even when they are considerably higher than the demands of, say, carpenters. And, finally, wages of tool- and diemakers are hardly likely to set the pattern for wages in the economy as a whole.

Note that the first effective unions tended to be craft unions; most of the unions in existence in 1933 were organized on a craft basis—especially if allowance is made for the fact that the unions in railroading and coal mining, although technically industrial, derived much of their strength from the relatively unique character of the skills their industries required. Again craft unions have been most effective where the skill they represent must be performed locally. Wages tend, for example, to be considerably higher in newspaper than in job printing because the former must, while the latter need not, be done locally. The distinction should not be pushed too far. If all the workers of an industry are organized along craft lines—as in the case of building—then Marshall's comment regarding buttons ceases to apply. And the very uniqueness which makes craft unions strong when demand is expanding makes them vulnerable when it is contracting or when the skills have become obsolete.

In short, where a union covers an industry, the settlement it demands is likely to have a major effect on the rate of increase of money wages both in its own industry and in others—whether or not they are organized. But, because of the very breadth of the impact, the industrial union is not likely to have as great an effect on relative or real income as have craft unions. Actually this is in one sense an obvious conclusion, for it boils down to the straightforward proposition that unions with the greatest power to monopolize have been able to achieve the largest wage increases. But, to the extent that it is correct, it goes far toward explaining why the vast expansion of the labor movement since 1933 has not had more obvious effects on the economy, as most of the expansion since that date has been by industrial rather than craft unions.

### Unions and the Distribution of Labor

Does the exercise of monopoly power by unions—and especially craft unions—have a seriously distorting effect on the distribution of labor within the economy? This is simply a different way of asking the question regarding the impact of unions on the distribution of income. If we accept Rees' estimates, the answer must be that the overall distortion is quite small. But there clearly is underallocation of labor in the area employing perhaps one twelfth of the labor force where unions have managed to raise wages by 15 to 20 percent. It is, in short, in this area—which we might call "button" situations—that the greatest harm is done. Underutilization of labor is, of course, most likely to be found in those areas where, through one device or other, effective restrictions on entry have been achieved; as far as the relative or real distribution of income and the labor force goes, the removal of such restrictions would be most socially desirable.

Let us conclude with an effort to set the problem in perspective. Only in the ultimate equilibrium of theory is the ideal distribution of the labor force ever achieved. Workers have been overallocated to agriculture throughout our history; even today there may be in agriculture as much overallocation of labor, and incomes below the "equilibrium" level, as there is underallocation of labor, and incomes above the "equilibrium" level, in all the areas where unions have achieved specially favored status. Moreover, the difference between average incomes in New York and Mississippi is as great as the difference between average incomes in the United States and Great Britain; it is obvious that problems raised by geographic misallocations are immense in scope. Although *all* misallocations of labor are undesirable, it seems clear that those resulting from the impact of unions are of relatively minor importance.

### Unions and Economic Fluctuations

Let us now turn to a brief examination of the impact of the growth of unions on the economic fluctuations to be considered in detail in Section IV. Is upward pressure on wages likely to stabilize or destabilize the economy? At the first level of analysis, the answer is probably neither. For wages are at one and the same time both purchasing power and costs. If an increase in wages increases purchasing power (as unions like to argue), it equally increases production costs (as businessmen like to stress). There appears to be no a priori reason why one should increase faster than the other—and therefore no a priori reason why wage increases should be either stabilizing or destabilizing.

At a second level of analysis the impact of wage increases on *expectations* has to be considered. The difficulty is that, given the proper expectations, anything can happen. Thus if a wage cut leads to the expectation that the present is a good time to buy, it will be stabilizing; but if the cuts create the expectation of further cuts, it will be destabilizing. Again if a wage increase gives rise to the expectation that prices will rise in the future making the present a good time to buy, it will be stabilizing; but if it gives rise to the expectation that prices are ridiculously high and will inevitably fall, it will be destabilizing.

In short, economists in most cases are inclined to put little weight on wage increases or decreases as a stabilization device. Actually the National Recovery Administration from 1933 to 1935 made an effort to raise wages, with prices to increase no more than necessary to offset the wage increases. There is general agreement that, as a device to promote recovery, the program was disappointing.

Two qualifications of our basic conclusion are worth making. Some economists would favor wage increases under conditions where saving appeared to be excessive; we shall find in Section IV that there are, however, other ways of achieving the same result. Second, some would argue that the union movement, by reducing the extent to which wages are likely to decline in a depression, has reduced the extent to which buyers have a reason for postponing their purchases in hope of obtaining lower prices—thereby tending to reduce the size of fluctuations. Perhaps the increasing rigidity of wages in recent years has, on balance, been stabilizing—though many would argue that it made adjustment increasingly difficult in those areas of the economy that became overextended during the boom. But the mere fact of somewhat greater rigidity is unlikely to have altered in any significant way the causes or characteristics of our economic fluctuations. Hence, in summary, it appears unlikely that the growth of the union movement has much altered the prospects for fluctuations in our economy.

## Unions and Economic Development

"Automation" is a new word for a process that has been going on for at least two hundred years. The spinning jenny and the power loom, whose invention is generally taken as marking the start of the Industrial Revolution, are nothing but devices to do *automatically* what previously could be done only by hand.

When workers smashed early machines on the ground that the machines were taking away their jobs and causing their families to starve, they started a pattern of reaction that has continued—though in less violent form—down to the present day. It is easy enough to demonstrate that *technological unemployment*—unemployment resulting from technological changes—is not permanent; after two hundred years of steady improvements in technology, to say nothing of "automation," it is today unusual for 1 worker in a 100 to be out of work for as long as six months. It can also be demonstrated, as is done in Section III, that technological change has been responsible for the major part of the sevenfold increase in real income per hour of work that was achieved between 1875 and 1960. The economy, in short, has gained immensely from technological change.

Under free enterprise the burden of change—from whatever source the change may come—falls on the particular factors of production whose value is thereby reduced. (Because we are here interested in unions, in what follows we shall concentrate on labor, but almost everything that will be said applies equally to the other factors of production.) Workers threatened by change have from time to time tried to impede it rather than accept the burdens involved. But, as competition has generally prevailed in labor markets, efforts to impede change have not generally been successful. What we are basically interested in in this section is whether the situation has altered now that unions have in many cases achieved an effective monopoly over the jobs of their members. In the discussion we shall concentrate on technological change, as rapid economic development inevitably involves rapid technological change.

Note that it is not essential for a worker to bear the full burden of technological change. Suppose we define "burden" as the excess of prechange over postchange earnings. The economy as a whole would bear the burden as we have defined it if it undertook to supplement the worker's postchange earnings by the excess involved; or the burden could be imposed entirely on the entrepreneur by requiring him to provide the supplement.

Because most of the burden in our sense in fact falls on the worker, there is often sentiment in favor of impeding change rather than subjecting workers to insecurity and the burden of change. Analytically this makes little sense; it would be far better for the economy to guarantee workers against insecurity and accept the full burden of change. For, in general, technological change increases real income, whereas any guarantee against insecurity that the government might give would involve merely a transfer payment. Hence the economy as a whole generally benefits from the most rapid possible change even if it accepts the full burden that may be involved. There is, however, a strong case for placing at least some part of the burden on the worker affected, for he is likely to have little incentive to find a well-paid alternative job if he is guaranteed a generous supplement for the rest of his life. (He might, of course, even find a better-paying job as a result of the change, in which case the "burden" would turn into a "benefit.") But there is no easy way of deciding just how the burden should be distributed between the individual and the economy as a whole.

On the other hand, there is a strong case against placing too much of the burden—always in our sense of reduction in the earnings of displaced workers—on the entrepreneur. If he had to continue to pay a skilled wage to a man whose work was made unskilled by the introduction of a machine, he would be unlikely to introduce the machine. Keep in mind that as yet the economy accepts no obligation to a skilled worker who loses his job except to provide him with the unemployment insurance that covers all workers. It is, therefore, understandable that unions of skilled workers should seek some additional protection. A case, moreover, can be made for asking profits (especially where they have increased as a result of change) or prices charged consumers (especially where they have fallen as a result of change) to absorb a part of the burden. But there is a real danger that, if the share entrepreneurs are asked to bear is too high, change itself will either not take place or will be much slowed down.

Finally, it is worth stressing that our emphasis on technological change, however justified because of its connection with development, is rather arbitrary from the union point of view. What a union wants is the largest possible demand for the work done by its members, and there are many ways that demand can be increased besides impeding technological change. With this difficulty in mind, let us briefly examine some of the ways that unions have actually behaved.

### Reductions in Productivity by Union Action

Inefficient use of presently available labor provides the most spectacular examples of union restrictions on productivity. Three men riding in the cab of a locomotive protected by a "dead hand" throttle when one is enough to drive a bus through traffic, bricklayers limited in the number of bricks they can lay or painters in the size of brush they may use, printers solemnly setting and then immediately destroying "bogus," jurisdictional disputes in which carpenters and metalworkers bring all work to a halt while debating who is to work on wooden doors sheathed in metal, or electricians whose sole daily assignment is to throw the switch on certain machinery because they have won the "right" to "connect and disconnect" everything that draws more than a specified amount of current—all such inefficiencies make little or no sense. But it is also doubtful whether overall they amount to very much. They tend to be confined to the building trades, a few other areas where skilled crafts predominate, and the railroads. Probably the building trades and the railroads are the worst offenders. In the latter case management has estimated that "featherbedding" costs $500 million annually; this is 9 percent of payrolls and 7 percent of the contribution the industry makes to the national income. But it seems probable that the management estimate exaggerates what is involved. Moreover, studies of the building trades have also concluded that the overall quantitative importance of "make work" was considerably less than the more spectacular examples might suggest. Finally, there is relatively little evidence of "featherbedding" in the mass-production industries, which contain by far the largest number of unionized workers. In areas that are unionized, therefore, it seems doubtful if "make work" on an overall basis wastes as much as 2 percent of the factors utilized. As only about a quarter of the labor force is unionized, it follows that the direct waste resulting from union restrictions is unlikely to amount to more than a half of 1 percent of the national income. And even if unions, because of the bad example they set, are held indirectly responsible for considerable waste in nonunionized areas of the economy, 1 percent of the national income is surely a liberal estimate of the overall waste that can conceivably be attributed to unions.

Efforts to impede technological change are harder to analyze and measure. Obviously painters who refuse to use a large brush can hardly be expected to welcome paint sprayers, bricklayers larger bricks or molds that speed up the bricklaying process, or hod carriers power-driven wheelbarrows. But again the same rather special areas within the labor movement are most likely to be involved. In the mass-production industries, such as automobiles and steel, lack of restrictions reflects in considerable part a conscious effort by management to retain its freedom in regard to technological improvements in exchange for concessions on wage rates. In coal mining a belief by John L. Lewis that immense technological improvements were essential if mines were to provide satisfactory working conditions appears to have been responsible. In short, the areas where unions have seriously impeded technological change are not numerous.

### Increases in Productivity by Union Action

In the opposite direction there are many cases in which unions have promoted technological improvements. Perhaps best known are the efforts of the Amalgamated Clothing Workers and the International Ladies' Garment Workers to help entrepreneurs in the clothing trades operate efficiently. But, more generally, the existence of unions often helps to promote the acceptance of change. A monkey wrench—or a wooden shoe, from which we derive "sabotage"—thrown into new machinery when workers feel that their interests will not be protected can do much to retard the introduction of improved technology. On the other hand, where workers feel they can count on the union to protect their interests, they may not resist the introduction of new machinery, and may even welcome it if it makes their tasks easier.

Can any overall balance be struck as to the impact of unions on technological change and hence economic development? Not with any accuracy. Perhaps unions in the United States have impeded development, but it is not certain that they have and even less certain that, if they have done so, the extent to which development has been slowed down is quantitatively significant. Until the results of additional research are available, perhaps the fairest response to the charge that unions retard development is the famous Scotch verdict: "Not proven."

# PART IV Other Aspects of Economizing

# 22 International Trade—Analysis

## Specialization and Trade

When Adam Smith published *The Wealth of Nations* in 1776, the average American family produced most of what it consumed; today even a wheat farmer is likely to buy his bread at the A & P. Undoubtedly this change—from producing most of what we consume to consuming almost nothing that we produce—has contributed immensely to the rise in living levels that has taken place during the period. But the advantages of specialization were already obvious to Adam Smith and are today generally understood: "A jack of all trades is a master of none." Even without differences in aptitudes practice permits people to develop skills that make them more productive; differing aptitudes make specialization even more desirable. But the real difference comes when specialized capital goods—ranging from hand tools to mechanized assembly lines—can be utilized; then not only is the increase in productivity immense but things can be produced that are quite impossible to make by hand.

The main thing limiting specialization in 1776 was inadequate transportation. Anyone accustomed to driving a car at sixty miles an hour over a turnpike cannot appreciate the difficulties of travel when all roads were dirt and the fastest transportation was by horse. To a lesser extent the smallness of the population also made specialization difficult. Both these influences are summed up in the economist's dictum: "Specialization is limited by the extent of the market." Clearly there was no point in becoming a cabinetmaker if the number of people wanting cabinets in the area over which they could be transported economically was too small to keep a cabinetmaker busy. But as the market grew in size, as a result of increased population and improved transport, cabinetmaking became practical—and the consequent specialization brought sharp increases in productivity.

### National versus International Trade

It is in some ways unfortunate that international trade is considered separately in economics texts, for separate consideration frequently gives the impression that there is something special about trade between nations in contrast to trade within a nation, when in fact the benefits of specialization are the same in both cases. Actually a "nation" is a political unit with little economic significance and a size usually determined by historical accident. Had the Constitution not replaced the Articles of Confederation under which we fought the Revolution, it is conceivable that there might have been at least thirteen "nations" in the area now occupied by the United States. As it is, the prohibition by the Constitution of state barriers to interstate trade has made the United States *the largest free-trade area the world has ever known.* Currently two groups of European nations—sometimes known as the Inner Six and the Outer Seven, and between them including almost all of Europe outside the Iron Curtain—are making determined efforts to achieve, over the next decade or so, substantial reductions in prevailing trade restrictions. Both areas combined—or all thirteen nations taken together—offer an economic market not greatly different from that provided by the United States alone.

It should be obvious, therefore, that "international" trade has a quite different meaning for a country such as the United States from the meaning it has for, say, Luxembourg. The loss in economic well-being from decreased specialization due to trade barriers is obviously larger if "international" trade amounts to 50 rather than 5 percent of a nation's national income.

### The Principle of Comparative Advantage

Apart from noting that in the past there has been a close correlation between increasing specialization and rising living levels, we have so far offered no proof that specialization brings benefits. To demonstrate that benefits are involved is quite easy. Suppose, disregarding transportation and marketing costs, we start with the output that can be produced in Nations A and B by roughly comparable "packets" of productive factors—land, labor, and capital in some appropriate combination. Let us assume that a packet of factors produces the following number of units of Commodity X and Commodity Y:

| | Nation A | Nation B |
|---|---|---|
| Commodity X | 20 | 2 |
| Commodity Y | 10 | 4 |

Offhand in this case trade would appear to offer no advantage, as Nation A is so favored that it can produce, with a given packet of factors, more of *both* Commodity X *and* Commodity Y than can Nation B. Under such circumstances Nation A is said to have an *absolute* advantage in the production of both commodities. But A also has a *comparative* advantage in producing X, as one of its packets can produce ten times as much X but only two and a half times as much Y. So long as there are such comparative differences in advantages, trade may be mutually advantageous. Specifically, it will benefit both nations if A concentrates on producing X, where it has the *greatest comparative advantage,* and if B concentrates on producing Y, where it has the *least comparative disadvantage.*

This is the famous principle of comparative advantage, which has long been offered as an explanation of international trade. But keep in mind that similar benefits result from *all* specialization and trade. In fact, the only fundamental difference between international trade and trade within a nation is that there is rather greater immobility of the productive factors, in a world where immigration is restricted, among nations than within a nation. It is this immobility that causes us to depend on comparative advantage rather than on marginal revenue product to explain values in international trade.

### The Benefits of Specialization

To demonstrate that both nations benefit when they concentrate on areas where they have the greatest comparative advantage or the least comparative disadvantage, let us assume that each of our two nations possesses ten packets of productive factors and that, quite arbitrarily, five packets are used to produce each commodity. Then production in the two nations will be as shown in Table 22-1.

But suppose six factor packets are devoted to producing X in Nation A and no packets whatsoever in Nation B. Then production will be as shown in Table 22-2. As a result of specialization, there has been

**TABLE 22-1**

**Production without Specialization**

| | Nation A | Nation B | Both Nations |
|---|---|---|---|
| Commodity X | 100 | 10 | 110 |
| Commodity Y | 50 | 20 | 70 |

**TABLE 22-2**

**Production with Specialization**

| | Nation A | Nation B | Both Nations |
|---|---|---|---|
| Commodity X | 120 | — | 120 |
| Commodity Y | 40 | 40 | 80 |

a clear increase in the total output of the two countries. If trade now starts and Nation A exchanges 15 units of X for 15 units of Y produced by Nation B, then (still disregarding transportation and marketing costs) the supplies available in the two countries will be as shown in Table 22-3.

**TABLE 22-3**

**Available Supplies with International Trade**

| | Nation A | Nation B | Both Nations |
|---|---|---|---|
| Commodity X | 105 | 15 | 120 |
| Commodity Y | 55 | 25 | 80 |

Thus *specialization and trade* have led to more of *both* commodities for *both* countries; it is this possibility that explains why it is that economists have probably shown greater agreement regarding the desirability of free trade than on any other policy matter.

### The Terms of Trade

But why should 15 units of X exchange for 15 units of Y, giving "terms of trade"—or the ratio of X to Y—of 1 to 1? There is no reason why this exact ratio need prevail; both countries will gain so long as the terms of trade fall within the range of 2 to 1 and 1 to 2, as Table 22-4 shows. Note that, in Case I, when the ratio is 2X to 1Y, Nation A is no better

TABLE 22-4

Available Supplies with Limiting Terms of Trade

| | Nation A | Nation B | Both Nations | Terms of Trade (X ÷ Y) |
|---|---|---|---|---|
| | | CASE I | | |
| Commodity X | 100 | 20 | 120 | $\frac{20}{10}$ or $\frac{2}{1}$ |
| Commodity Y | 50 | 30 | 80 | |
| | | CASE II | | |
| Commodity X | 110 | 10 | 120 | $\frac{10}{20}$ or $\frac{1}{2}$ |
| Commodity Y | 60 | 20 | 80 | |

off than it was without specialization and trade; all of the additional 10 units of both X and Y go to Nation B. Note also that, in the absence of specialization, a packet of factors in Nation A can produce twice as much X as Y—or in the ratio of 2 to 1. It is therefore the ratio of the productivity of a packet in the absence of specialization that sets a limit beyond which the terms of trade cannot go if trade is to take place—beyond which, in other words, the terms of trade are so adverse as to cancel out the benefits of specialization. Vice versa, in Case II, all the benefits of trade go to Nation A; for in this case the ratio of 1X to 2Y is the same as would prevail in Nation B in the absence of trade. In other words, the ratio of relative productivity of a packet of factors in the absence of specialization in each nation sets the limits beyond which the terms of trade cannot go; so long as the terms stay within these limits, both nations benefit from trade. There is, unfortunately, no easy way of determining just how the benefits will be shared in any particular case.

### Trade and Relative Factor Endowments

Why is it that Nation A can produce more than Nation B? One obvious answer is that A is better endowed with natural resources, which are not distributed over the world's surface uniformly. A nation may entirely lack certain resources, such as oil or iron ore, or its climate may be badly adapted to certain types of agriculture. Overall, something in the order of half of the commodities in world trade are exported by countries with an absolute advantage in their production. Note that this does not mean that the countries in question benefit greatly from their advantage; we shall see in Chapter 34 that differences in natural resources, provided that trade is basically free, do not help much in explaining differences in living levels.

But Nation A may also be better endowed than Nation B with labor, capital, or technology. In this case trade need not result: if A were exactly twice as productive as B in the production of *everything* it would have no comparative advantage in anything and there would therefore be no basis for trade. But in a complex world the complete absence of comparative advantage is quite unlikely, so that trade in general is desirable whether or not a nation has an absolute advantage over the nations with which it trades.

### Living Levels and International Trade

Is this always so if the nation with an absolute advantage has a higher level of living? How can we afford to trade freely with a nation that has a lower level? Will we not be swamped by goods made by people who live on no more than a handful of rice, and have our level of living driven down to their level? It is the fear of lowering our living levels by having to compete with poorer nations that more than any other factor explains our unwillingness to accept complete free trade.

But in the example given in Table 22-3 there was an increase in living levels rather than the feared decrease. In the case of Nation A all that happened when trade took place was that a packet of productive factors was shifted from producing Y to producing X, where it was more productive than before. So long, therefore, as trade involves a balancing shift of productive factors, it can do no harm regardless of the living level of the countries with which we trade—and will, of course, do good if the factors shifted are as a result more productive. What we may call "the-handful-of-rice" fear is really that we will be swamped by imports produced by people living on rice without any compensating increase in exports. Perhaps the most important task of this chapter is to make clear that this is quite unlikely. In the event of a sudden increase in imports, we shall find that influences are brought into play that tend to reduce imports and expand exports until balance is restored.

### The Meaning of the Balance of Payments

Many items enter into the balance of payments. The most obvious are the "visible" exports or imports of goods, leading to what is called the "commodity" balance of trade. But there are also "invisible" items, such as shipping or insurance services. Visible and invisible transactions make up the "current" balance of trade. In addition, there are loans, gifts, and gold movements, which will be discussed in greater detail in the chapter to follow. These items, added to those included in the current balance of trade, make up the "total" balance of trade, which we shall call the "balance of payments."

There is a long historical precedent for describing the commodity balance of trade as "favorable" when commodity exports are in excess of imports and "unfavorable" when they are not. Actually there need be nothing unfavorable about an excess of commodity imports: New York City doubtless has such an excess, paid for by the export of a variety of services. To stress this point, economists have sometimes described an excess of exports as an "active" and an excess of imports as a "passive" balance of trade. But there seems no reason for not using "favorable" and "unfavorable" provided we keep firmly in mind that no policy implications are to be drawn from the terms used.

### Why the Balance of Payments Balances

Essentially the balance of payments consists of claims of foreigners against us on one side and our claims against foreigners on the other. The next thing to be established is that "permanent" claims of foreigners against us tend to move into balance with our "permanent" claims against foreigners. This rather complicated statement is necessary because long-term investment abroad and government gifts are likely to be a "permanent" feature of our balance of payments. But suppose, to simplify the presentation, we disregard services, loans, gifts, and gold movements and consider a situation in which the United States does nothing except export and import commodities. On this basis what we want to establish is that the dollar value of exports and imports will tend to balance.

The mechanisms that restore balance in the real world are quite complex; a full discussion of the way they operate is beyond the scope of an introductory text. But it is relatively easy to show that compensating forces are at work. At present the money of most countries is tied together either through a fixed relationship to gold or through arrangements involving the International Monetary Fund. To start with the most basic situation, however, let us assume that both the United States and the rest of the world, which we shall call "Rest" for short, have inconvertible paper currencies that fluctuate freely in relationship to each other. The monetary unit of Rest is the "resta." Finally, let us assume that, when trade starts with the United States, it comes to be accepted that American importers are obligated to pay Restian exporters in restas and American exporters are obligated to accept payment in restas. (It could equally well be the other way round or determined by agreement from case to case, but it simplifies the exposition to have a specified procedure.) As restas are no good to American exporters, a foreign exchange market will arise in which our exporters seek to exchange the restas they have earned for dollars and our importers seek to exchange dollars for restas in order to be able to pay Restian exporters.

What will determine the rate of exchange between restas and dollars? The supply of restas offered by exporters relative to the demand for them by importers will determine their dollar value; as with any other market, the price of restas will settle at the point at which the supply of restas offered by exporters is equal to the demand for restas by importers. Moreover, as we have ruled out other reasons for wanting to buy or sell restas, it follows that this equality of supply and demand in turn means that the value of exports, which causes restas to be supplied, will be equal to the value of imports, which causes restas to be demanded —in other words, that exports and imports will balance.

### How Balance Is Restored

The process by which balance is achieved can perhaps best be demonstrated by starting with a specific equilibrium and showing that, if something disturbs it, the rate of exchange will vary until equilibrium is restored. Suppose the rate of exchange is 10 restas to the dollar and exports and imports are each worth 100,000 restas or $10,000. Suppose, further, a sudden desire on our part for Restian products, causing imports to double. Importers will then be seeking to buy 200,000 restas at a time when exporters will still have only 100,000 restas to sell. As a result the resta will become more valuable; suppose a rate of 5 instead of 10 restas to the dollar is temporarily established. Such a rate will *discourage imports and encourage exports.* Disregarding profit and transportation and marketing costs, goods costing 100 restas can be sold in the United States for $10 when the rate of exchange is 10 to 1, but when it is 5 to 1, a price of $20 will be necessary. Vice versa, American goods costing $10 can be sold in Rest for 100 restas (again disregarding marketing and transportation costs and profit) at the old rate, but at the new rate they need be priced at only 50 restas. The higher dollar prices that have to be charged will soon reduce the volume of imports, while the lower resta price that can be charged will soon increase the volume of exports. If, at the 5-to-1 rate of exchange, imports are reduced to a point at which importers need to buy only 150,000 restas while exports increase to the point at which exporters have 150,000 restas to sell, then trade will again be in balance and the 5-to-1 exchange rate will be the appropriate one for the changed circumstances. If not, the rate will continue to fluctuate until balance is finally achieved.

Is there any possibility that the old 10-to-1 rate will continue to prevail, allowing us to be inundated with 200,000 restas worth of imports when our exports are worth only 100,000 restas? There is no way that 200,000 restas of imports can be paid for by 100,000 restas of exports; only if half the Restians who supplied our imports were content *not to be paid* can the 10-to-1 rate continue. But if not paid, Restians must have been making us either a loan or a gift—both of which were ruled out at the start. Actually short-term loans may cause the rate to diverge from the "commodity" level, but such an influence is likely to be no more than temporary. On the other hand, if continuing long-term lending or gifts or services are brought into the picture, they may account for continuing divergencies of the actual rate of exchange from the "commodity" level. Thus ultimately it is the "permanent" claims of foreigners against us that must balance our "permanent" claims against them. But, to repeat the basic point, when trade is confined to commodities and currencies have no fixed relationship to each other, exchange rates tend to fluctuate in such a way as to bring about a balance of exports and imports.

### The Gold Standard

In addition to fluctuations in exchange rates, it is also possible to achieve balance by variations in relative prices with the rate of exchange unchanged. The gold standard has been the historic method for achieving balance in this way. One basic aspect of the gold standard is the acceptance by two governments of an obligation to buy and sell gold in unlimited quantities at fixed prices. So long as governments are able to discharge this obligation, the exchange rate between the two currencies will fluctuate very little. Suppose the United States government undertakes to buy or sell gold in unlimited quantities at $25 an ounce and Rest undertakes to do the same at 250 restas an ounce. Then, if imports were suddenly to increase to 200,000 restas while exports remained at 100,000 restas, the rate of exchange need diverge from a 10-to-1 rate by no more than enough to cover the cost of sending gold from the United States to Rest. For after importers had bought the 100,000 restas offered by exporters, they could still deliver the remaining 100,000 restas they owed by buying 400 ounces of gold for $10,000 and shipping it to Rest, where the government would be prepared to pay 100,000 restas for it, with which the importers would be able to pay their remaining debts.

What, under such circumstances, tends to bring exports and imports into balance? The second basic aspect of a gold standard is that a country's money supply should expand when it is receiving gold and contract when it is losing gold. During the heyday of the gold standard in the nineteenth century, this was achieved, not by conscious action, but by institutional arrangements that caused the money supply to increase by at least the monetary value of the gold received and vice versa. Why does this ensure balance? As a general rule, subject to certain qualifications discussed when the factors influencing the money supply are considered in Section IV, an increase in the money supply will raise prices and a decrease will lower them. Thus a country losing gold because imports are large becomes, as prices fall, a less attractive place in which to sell imports and a more attractive place from which to export, which in turn tends to bring imports and exports into balance.

Specifically, suppose the shipment of 400 ounces of gold abroad were to decrease American prices by 20 percent and to increase Restian prices by the same amount. Then, still disregarding marketing and transportation costs and profit, imports that had cost 10 restas and sold for $1.00 would now cost 12 restas and have to be priced at $1.20 at a time when competing American goods had fallen in price from $1.00 to 80 cents. Vice versa, exports that had cost $1.00 and had been priced at 10 restas, could now be bought for 80 cents and priced at 8 restas at a time when competing Restian products had risen to 12 restas. Clearly if gold movements lead to changes in the quantity of money and therefore changes in prices, they will tend to bring about a balance between exports and imports.

To summarize thus far, we have presented two ways in which exports and imports are brought into balance. The first involves fluctuations in exchange rates with relative prices unchanged; the second involves fluctuations in relative prices with exchange rates unchanged. They do not exhaust the balancing influences that exist in modern economies; there may well be situations in which the influence of favorable or unfavorable balances of payments on the *level of income* of two areas is more important than either of the mechanisms discussed. But the more complicated mechanisms in general simply *reinforce* the balancing mechanisms that have been discussed. Hence we may conclude that there is a basic tendency for "permanent" claims against us to balance our "permanent" claims against others.

## Free Trade and the Tendency toward Balance

Does this mean that all interferences with international trade should be eliminated? Such a conclusion is premature, for there may be reasons for deliberately sacrificing the benefits of specialization that international trade makes possible. But it does mean that we need not fear to trade freely with countries even when their level of living is lower than ours. In fact, the plea for a "scientific" tariff with rates set so as to equalize production costs between any two areas would, if it could be achieved, completely eliminate trade between the areas. Differences in relative costs resulting from differences in comparative advantage are what make trade not only possible but beneficial, whether or not there are differences in living levels.

Why should a nation give up the benefits of specialization by deliberate interference with international trade? Most protectionist arguments—such as the desirability of "keeping our money at home" or not allowing imports for fear they will take away jobs or lower living levels —make no sense in view of the tendency of payments to balance. But there are four arguments that, in certain circumstances at least, have a measure of economic validity: protection against imports is desirable to aid our *national defense,* to encourage *infant industries,* to promote appropriate *diversification,* and to influence the *terms of trade.* Each of these arguments deserves separate consideration.

### Free Trade and National Defense

It is obvious that it may be of benefit to a nation to be self-sufficient during war. In World War II both sides attempted to harm the other side by depriving it of essential supplies—an activity called "economic warfare." The theoretical case for measures designed to render a nation adequately self-sufficient so as not to be seriously harmed by economic warfare hardly needs elaboration.

The qualifications are practical. The danger is that we shall prepare economically for a long-drawn-out war of productive capacity just when nuclear weapons make such a war impossible. It is frequently argued, for example, that it is essential to keep domestic oil production high in order that our needs could be supplied if foreign sources were cut off. But it is unfortunately quite possible that the need for oil after a week of nuclear war will be no more than a small fraction of present domestic production. Clearly tariffs should not be imposed merely because the industry claims to be "essential for defense" or because some general thinks the industry might be useful in wartime. Recently the lead-pencil industry sought protection with the claim that it was "essential" because a modern army runs on paper work—though the military, even when paper work was at its height, never required more than a small part of our lead-pencil capacity! Again, generals have been found who favor the preservation of all American watch producers on the ground that their precision skills might be useful in wartime. But one of the things we ship to Switzerland in exchange for watches is machine tools; the generals never considered the relative importance for defense of increasing our production of machine tools rather than preserving an inefficient watch company.

Probably the best way of encouraging industries that are in fact essential for defense is to subsidize them with funds contained in the country's military budget. This would require the military to certify, in effect, that the subsidy was more important than an equivalent expenditure on any other military item. It would, moreover, mean that the subsidy was paid out of funds raised by taxes imposed in keeping with currently accepted principles of taxation. In contrast, when the subsidy results from higher domestic prices caused by a tariff, it involves a transfer of funds from consumers, arbitrarily and without regard to their individual needs, to favored producers, with little regard to either the specific needs of such producers or the alternative uses to which the funds might have been put.

### Infant Industries and Dumping

Where an industry depends to a considerable extent on "know-how," a case can be made for protection while such know-how is being developed. This is particularly true if countries with know-how try to prevent the development of new industries elsewhere by "dumping"—selling at less than cost. Under such circumstances a good case can be made for, say, a tariff for twenty years with rates declining 5 percent each year. A major difficulty is that there is practically no known case of an infant industry admitting that it has "grown up"! When sufficient time has passed so that it is obviously no longer an infant, in almost every case the industry simply changes to other arguments in justification of its need for continuing protection. Moreover, in developed economies the argument has little merit. Most competition for new industries comes from established domestic producers, who, in the face of new competition, may well pursue price policies that amount to domestic dumping. Yet new industries do manage to develop with regularity—in part because the firms involved are prepared to accept losses while they are establishing themselves.

A case for tariff protection against dumping in general can be made on the ground that no one should be allowed to sell at less than cost. But it seems hardly likely that foreign private producers will have an incentive to sell below cost except for short periods and for temporary reasons. Just as efforts to prevent sales below cost on the domestic market are likely, on balance, to do considerably more harm than good, so also are efforts to achieve the same end in international markets by tariff protection. To this there is one increasingly important exception: trade with socialist economies. In the long run a socialist economy will no more benefit from selling at less than cost than will a private producer. But in a socialist economy the loss may be absorbed by the economy as a whole, whereas under private enterprise the burden is borne by individual producers. As socialist economies frequently use their trade policies to further political objectives, the development of devices to protect private traders against losses from dumping undertaken for political purposes will become increasingly urgent as our trade with such economies expands.

### Diversification

A simple, but in certain circumstances convincing, argument for reducing specialization is that the benefits obtained from specialization do not justify the risks involved. There are highly specialized regions in the United States, and many towns depend heavily on a single industry, so that a sudden decline in demand for the area's principal product may cause serious hardship. But within a country the hardship is likely to be much mitigated both by the ease with which industries can move into the area and people move out. Many small countries are no larger than small regions within the United States, so that purely economic considerations might make a high degree of specialization desirable, as in the case of one-crop or one-mineral countries. But if demand for the specialized product declines, the development of new industries, and especially the movement of people to other areas, may be by no means easy. Under such circumstances it would be understandable if the country were deliberately to accept a somewhat lower level of living in order to avoid putting all its eggs in one basket. It should be obvious that this argument has little or no application to large and well-developed countries.

### The Terms of Trade

Table 22-4 gives the limits within which the terms of trade can vary and trade still take place in the example considered at the start of this chapter. The factors that determine where, within the range, the terms are likely to settle in any concrete case are hard to summarize. In the main they depend on relative supply and demand elasticities. It is theoretically possible that, with certain sets of elasticities, there is some combination of tariffs and subsidies that will so alter the terms of trade as to benefit a particular country by more than it loses from the overall reduction of specialization that is inevitably involved in such arrangements. Because such a reduction is entailed, it follows that other countries stand to lose from *both* the reduction in specialization *and* the change in the terms of trade. The other countries, therefore, have a strong incentive to counter by appropriate systems of tariffs and subsidies of their own—in short, to retaliate. In a world of reciprocal retaliation, the only result that is certain is that overall specialization will be reduced; as a result, *all* nations cannot possibly benefit. Although the *possibility* that a single nation may benefit cannot be ruled out, the *probability* seems quite small in view of the likelihood of vigorous world-wide retaliation.

### Underdeveloped Areas and Free Trade

Thus far we have discussed free trade with emphasis on developed areas. Do underdeveloped areas have special problems? It is not so much that the problems are special as that the last three arguments against free trade apply with special force to such areas. Being unindustrialized, they are likely to have relatively few commodities to export, and the commodities are likely to be raw materials with relatively inelastic demands. A mild recession in the American economy, for example, typically leads to a severe decline in our imports of raw materials for industrial use, which in turn leads to drastic alternations in the terms of trade. In short, such areas tend to have a feast when industrialized countries are prosperous and a famine when they are not. We shall explain in Section III that the essential margin over consumption that makes development possible is in any event small when development starts. If the exportable part of the margin fluctuates greatly in its ability to buy imports, the country's entire development effort may be seriously jeopardized when the terms of trade become unfavorable.

One possible answer is to undertake commodity stabilization schemes that provide for the commodity to be bought up and stored when supplies are above "normal" and to be taken from storage and sold when supplies are below "normal"—rather like our domestic efforts to achieve an "ever-normal granary." In theory such schemes can be used merely to iron out fluctuations; in practice they are likely to attempt to increase the receipts of those involved by using the power to monopolize inherent in concerted action. It is not this aspect that raises the greatest problems: we may conceivably wish to aid the countries involved and therefore not be averse to being exploited. Rather the trouble is that such schemes, when temporarily successful in the past, have usually induced sharp expansions of capacity that have in most cases caused a breakdown of stabilization efforts and ultimate results even worse than the situations prevailing before the schemes were attempted. We have, in fact, had considerable difficulty in achieving an "ever-normal granary" in the United States; it seems clear that to achieve such a result on an international basis will be much more difficult.

If concentrating on a few commodities in which an underdeveloped area has a clear comparative advantage exposes the country to such violent fluctuations in its ability to obtain imports as to imperil its entire development program, efforts to achieve diversification and industrialization by "temporary" protection of infant industries are understandable. As already suggested, if such protection really were temporary and the infant well chosen, the case would be relatively strong. One danger, however, is that the industries to be protected will be chosen more as status symbols than for their economic contribution: no nation can hold its head up these days unless it has oil and steel industries—even if it can buy oil and steel more cheaply elsewhere! Again, world-wide development is certain to make raw materials increasingly scarce relative to manufactured commodities; countries that try to develop manufacturing industries for which they are poorly suited rather than the raw materials for which they have a clear advantage may well come to regret their choice. Finally, the unfortunate results of specialization all occur during periods when industrial demand for raw materials is falling; the benefits are correspondingly large when demand is rising. In theory at least, underdeveloped areas could mitigate much of the impact of recessions by carrying over into such periods a part of what they earned during periods of prosperity. This is, however, rather like telling most Americans that they can avoid installment credit charges if only they save up enough before they buy a new car!

To sum up, underdeveloped areas do typically have some special problems, for they are likely to be particularly affected by changes in the demand for raw materials and in the terms of trade. As a result, the infant-industries and diversification arguments carry special weight for such areas. But it is by no means clear that widespread protection and an emphasis on industrialization is necessarily the best solution for countries with a clear advantage in producing raw materials in a world in which such materials are inevitably going to be increasingly scarce.

### Some Conclusions Regarding Free Trade

Thus far we have basically concentrated on an analysis of the case for and against free trade in the long run. Not much has been said about short-run problems. It is possible, for example, that foreigners will not immediately use the dollars they earn—will in effect lend them to us. Then employment may decline in Industry A without there being any compensating increase in Industry B—just as follows from any other decision to hold money idle. Vice versa, if we can by a tariff reduce imports without any immediate decline in exports—because we are in effect lending the difference—it may be possible to increase employment in Industry A as a result of the decline in imports without reducing employment in Industry B—thereby "exporting our unemployment" to other countries.

In short, in a complex economy many things are possible. Perhaps this is all that should be said. On the other hand, in my judgment, none of the arguments for protection that have been discussed, and none of the possibilities that have not been discussed, alter in any important way the broad conclusion, to which the discussion has pointed, that *free trade is in general desirable as a matter of basic policy.* In my opinion—which is probably shared by a majority of economists—it would be desirable for the United States to move rather rapidly toward complete free trade. To be concrete, even in the absence of agreement with other nations, it would seem to me desirable to achieve complete free trade in not more than ten years by cutting our present tariff 10 percent a year. This assumes that the military budget will provide subsidies for industries essential for defense and that devices other than tariffs will be developed to eliminate the harm likely to be done by erratic and politically inspired trading activities of socialist economies. Apart from these two qualifications, the other arguments against free trade do not appear to have relevance to an economy as large and as vigorous as ours. This, then, is the basic policy conclusion to which our analysis appears to lead. In the next chapter we shall see whether the more practical considerations with which it is concerned require any modification of this basic conclusion.

# 23

# International Trade— Practical Considerations

## Some Tariff History

American history has been marked by repeated fights over the tariff, which drew its early significance from the fact that international trade was relatively more important before we became industrialized. In fact, until industrialization, both the infant-industries and diversification arguments had a merit they do not now have. In addition, strong sectional interests were at stake. The areas where industrialization started, which especially benefited from protection, were mainly in the North until the Civil War, whereas the agricultural areas, which paid the price of protection, were in the South and the West. In fact, the first serious threat of secession that the country faced arose not over slavery, but over the "Tariff of Abominations" in 1832. Although fighting over the tariff never again reached the same degree of bitterness, it did not end with the more general industrial growth that followed the Civil War but has continued into the present century, with each Republican regime tending to raise duties and each Democratic regime to lower them. The all-time high in protection was reached with the passage of the Hawley-Smoot tariff in 1930.

Average rates of duty set by a tariff are not easy to compute. One reason is that, until quite recently, half of all imports were admitted free. Goods on the "free list" are mainly raw materials or noncompetitive foodstuffs, such as coffee or bananas, where other countries have a clear absolute advantage. But because such goods are admitted free, the overall "effective" duty—total customs receipts divided by the total value of imports—even under the Hawley-Smoot tariff was only around 20 percent, despite the fact that rates on many categories of "dutiable goods" averaged 50 percent or higher. Computed in this fashion, the effective duty may be misleading because very high rates may keep goods out completely, so that a country may conceivably have a reduction in its effective duty at a time when effective protection is actually increasing.

However measured, the rates of the Hawley-Smoot tariff were so high that they caused world-wide retaliation and intensified the collapse in international trade that was an inevitable consequence of the Great Depression. To restore the flow of trade President Roosevelt secured the passage of the Reciprocal Trade Agreements Act in 1934, which permitted the President to make agreements with other countries reducing tariff rates by specified amounts. Slow but steady progress in reducing rates was made up to World War II, and even greater progress was achieved in the early postwar period, so that by the middle fifties the effective duty had been reduced to less than 6 percent. But all recent agreements have had an "escape clause" that permitted tariff reductions to be rescinded if the Tariff Commission found they were injuring American industry. And since 1951 the commission has been charged with establishing "peril points" below which, in the commission's judgment, reductions would injure industry; concessions below such points may be made only under threat of reversal by a two-thirds concurrent resolution of the Congress. Overall these provisions have brought an end to the reduction in rates. In fact, the effective duty has recently risen, not so much as a result of increases in individual rates but rather as a result of an increase in the percentage of imports subject to duty, which has occurred for reasons we shall shortly want to examine.

### Some Influences on the Balance of Trade

We have seen that there is a tendency for the "permanent" claims of foreigners against us to balance our "permanent" claims against them. It follows that the commodity balance of trade tends to adjust to, among other things, long-term capital movements. During most of the nineteenth century the United States was borrowing from abroad; as a result it had an unfavorable balance of commodity trade, as, in effect, foreigners lent us the excess of our imports over our exports. This situation is sometimes described as involving an "immature" debtor. In contrast, a "mature" debtor is one whose interest payments on past loans have become larger than current borrowing; in this case a favorable commodity balance is necessary. If the favorable balance becomes large enough, it may be used for debt retirement and then for lending abroad;

this is the pattern followed by the United States. Toward the turn of the last century, our commodity balance became favorable and we became a mature debtor. During World War I, as all goods including munitions were sold to our allies, we developed a huge favorable balance that we used to pay off our debts. Favorable balances continued during the twenties and we lent the surplus abroad, being during that period an "immature" creditor lending more than we received in interest in contrast to a "mature" creditor, who lends less than the interest received and has, therefore, an unfavorable balance of trade.

Our commodity balance continued favorable in the thirties, despite the world-wide breakdown in international lending that accompanied the Great Depression. Continuance of a favorable balance was made possible during the period by our acceptance of large quantities of gold—so large that by World War II we held well over half of the world's monetary gold stock. Early in the war itself the Lend-Lease Act established the principle that each producing nation should lend or lease its products to the nation that could use them most effectively against the common enemy. Under Lend-Lease the United States, as the most important producer, made large quantities of goods available to its allies, but it also received a considerable amount of reverse Lend-Lease in the form of goods and services provided us by our allies.

At the termination of the war, Lend-Lease came to an end at a time when there was an intense and world-wide demand for American goods to meet urgent needs. Britain was the country most immediately affected, and her need was met by a loan of several billion dollars. But it soon became clear that the problems of Europe as a whole could not be solved by loans without placing an undue burden on the nations involved and risking serious subsequent payment difficulties at the time when the loans fell due. Our response was the Marshall Plan, under which we gave the funds to purchase the American goods needed for European reconstruction. Thus overall during the war and postwar periods the continuance of a favorable balance of trade was made possible by our gifts and grants.

### The Present Balance of Payments

Now let us look in greater detail at our current balance of payments, which Table 23-1 presents for the year 1960. Of the items in the balance of payments, the importance of services is worth noting. In addition to shipping and insurance, expenditures by tourists have recently become increasingly important. It has been estimated that 1,600,000 Americans went abroad in 1960, and we owe payment for the services provided them

TABLE 23-1

The Balance of Payments in 1960

(In billions)

| Payments by the United States | | | Payments to the United States | | |
|---|---|---|---|---|---|
| Commodity imports | 14.7 | | Commodity exports | 19.4 | |
| Services | 5.6 | | Services | 7.8 | |
| Military purchases | 3.0 | | | | |
| Current balance | | 23.3 | Current balance | | 27.2 |
| Remittances | 0.8 | | Repayments on government loans | 0.6 | |
| Government grants | 3.4 | | Gold exports | 1.7 | |
| Net private investment | 3.2 | | Short-term loans | 2.1 | |
| | | | Unknown error | −0.9 | |
| Total Payments | | 30.7 | Total Payments | | 30.7 |

SOURCE: *Survey of Current Business,* March, 1961.

by foreigners while they were abroad quite as much as for commodity imports. Noncurrent items include gifts, loans, and gold movements. Gifts used to be mainly "remittances"—money sent to relatives by recent arrivals—but we have seen that today much larger gifts of government origin must be taken into account. Loans are broadly of two sorts: those involving long-term investments in another country, as when an American company opens a mine or builds a plant abroad, and those involving short-term commitments, which move more in response to differences in interest rates or possible fluctuations in the rate of exchange. Finally, gold movements are of special significance because of their relationship to the supply of money.

National income in 1960 was $417 billion, so that total payments amounted to almost 7.5 percent of income. Commodity imports were 3.5 percent of income, services and military purchases together about 2 percent, gifts—both government and private—1 percent, and net private investment rather less than 1 percent. Clearly for the American economy, with its immense domestic market, international trade is quantitatively relatively unimportant; nor can it be said that our total gifts and investments, even when lumped together, were large in relation to our national income.

## The Impact of Free Trade

Our basic policy conclusion regarding the desirability of free trade must be considered with reference to these figures. An estimate has been made of the probable increase, within three to five years, in the imports of goods now subject to duty if tariffs and all other restrictions were completely abolished; the conclusion reached was that the expansion might be between 50 and 60 percent.[1] Clearly such a projection must be imprecise; moreover, in this case no estimate was made of the extent to which complete free trade would increase the importation of goods that presently do not enter the United States at all. But, disregarding military purchases, even if complete free trade were to lead to a doubling of our purchases of both goods and services, the resulting current balance of trade would amount to only 10 percent of the national income. If the change from the present 5 percent to 10 percent were spread over a ten-year period, it seems unlikely that the shifts in any one year would amount to as much as 1 percent of income. They would, therefore, be so small on a relative basis as to be hardly noticeable in an economy marked by as sharp shifts in demand and as rapid technological changes as occur in the United States. For this reason, to the extent that government aid for particular areas hurt by tariff reductions seems desirable, it can best be made available as part of a broad program for all "distressed areas" hurt by dynamic developments in the economy rather than as a special program to deal with the specific impact of tariff reductions.

If the impact is likely to be small, so are the *economic* benefits likely to result from complete free trade. Suppose we were to use an additional 5 percent of our productive factors to produce goods for export (or a total of 10 percent); the question is how many more units of goods would we receive in imports compared with the number we would have received if the productive factors had continued to produce for the domestic market. In the quite arbitrary example given in the last chapter, a 10 percent shift of packets in Nation A led to a 5 percent increase in X (from 100 to 105) and a 10 percent increase in Y (from 50 to 55), whereas a 50 percent shift in the case of Nation B brought about a 50 percent increase in X (from 10 to 15) and a 25 percent increase in Y (from 20 to 25). But extreme increases are likely only where there have been extreme restrictions on trade or even its complete prohibition by quota or otherwise. True, in many cases our tariff procedures, which are deliberately and needlessly complex, are more of an impediment to trade than the duties levied; it has been pointed out that it takes many goods longer to pass through customs than it took Columbus to discover America! Difficulties in trading, however, are most likely to have been overcome where the benefits from trade are greatest, so that the benefits from a *second* 5 percent of productive factors devoted to producing for export are likely to be very much less than the benefits from the first 5 percent.

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[1] Howard S. Piquet, *Aid, Trade and the Tariff* (New York: Thomas Y. Crowell Company, 1953).

Hence, all in all, it seems doubtful if a doubling of imports and exports as a result of complete free trade would lead to as much as a 50 percent increase in the availability of goods. But this in turn means that complete free trade would probably increase our level of living by hardly more than 2.5 percent—or almost certainly by less than 3 percent. Although this may not appear to be much of a gain, keep in mind that for other countries, where trade is relatively more important, the gain would be proportionately larger.

Moreover, to the purely economic benefit must be added the clear political gain that would accrue to us as leader of the free world if we were to take the initiative in abolishing all restrictions on the flow of goods between nations. We have benefited immensely, both economically and politically, from the removal by the Constitution of all restrictions on the flow of goods between our states. Even if we have little more to gain economically from abolishing the remaining restrictions on international trade, we have much to gain from the increase that free trade would bring in the viability of the free world.

## The Practical Problem

Despite the general agreement among economists on the desirability of working toward free trade, there is no chance of achieving it in the foreseeable future. No amount of agreement among economists can be expected to deter textile workers, hurt by an increase in imports of Japanese textiles, from pleading for protection. Protection, moreover, is likely to be obtained because those hurt by imports are militant, organized, and vociferous groups who have a clear incentive for bringing as much political pressure to bear on their representatives in the Congress as they possibly can. Further, funds to aid in the campaign are likely to be readily available from firms standing to benefit from protection; businesses with a well-developed sense of tariff favors to come have classically been a major source of political contributions. In fact, only the Constitutional prohibition of restrictions on interstate trade prevents gross interferences with it. Not many years ago the Supreme Court had to condemn, as an unreasonable burden on interstate commerce, a requirement that milk brought into Rhode Island from other states, and therefore not benefiting from Rhode Island sanitary inspection, should have this unfortunate omission called to the attention of Rhode Island consumers by being colored green!

Consumers who would benefit from lower prices and workers who would benefit from expanded exports are likely to be either apathetic or uninformed. How many consumers can be expected to write their congressman protesting a duty on something on which they may spend a fraction of their income, compared with those likely to write when they feel their jobs are threatened? Or how many workers in exporting industries can be expected to protest a reduction of imports on the ground that their jobs are thereby threatened? True, some manufacturing companies with a large volume of exports have in recent years come out in favor of freer trade, breaking the practically unanimous stand of manufacturing industry for protection that existed when our exports were overwhelmingly agricultural products. But they have not been willing to offer the support, financial or otherwise, that is forthcoming from firms directly threatened by competing imports.

### Recent Developments in the Balance of Payments

In the face of the obstacles just outlined, the progress that has been made since the days of the Hawley-Smoot tariff is quite remarkable. Recent developments, however, cast doubt on whether we shall be able to hold the gains. Our current balance, for the first time in many years, became unfavorable in 1959, reflecting a sharp decline in our surplus on commodity account, which amounted to less than $1 billion in that year. This decline was mainly caused by a sharp increase in our imports of finished manufactures, which rose from 20 percent of total commodity imports in 1952 to 35 percent in 1959. This, in turn, explains the sharp increase in the percentage of goods subject to duty from 45 percent in 1954 and 50 percent in 1956 to 61 percent in 1959.

Note that the unfavorable current balance in 1959 was minuscule—only $0.1 billion—and that our current balance again became substantially favorable in 1960. What made the situation difficult is that in 1959 we undertook to make available by private remittance, government grant, or private investment a total of $5.5 billion, and this sum increased to almost $7.5 billion in 1960. This, remember, amounts to less than 2 percent of the national income. But in 1960 we were able to meet our commitments only by exporting $1.7 billion of gold and receiving from foreigners short-term loans amounting to $2.1 billion (apart from transactions not accounted for). Obviously this cannot continue. Are we not experiencing the very thing feared by advocates of protection: an increase in imports not matched by an increase in exports?

Let us start with two things it appears best *not* to do. First, in view of our position as the richest nation in the world and the urgency of the need for world-wide economic development, any reduction in our military or economic aid to foreign nations or our private foreign investment would seem clearly undesirable. In fact, it may well be that a significant expansion will soon be necessary if we are to counter the increasingly effective competition in foreign aid that the Soviet Union is offering. Although it would help if other nations were to participate to a greater extent in making military and economic aid available, the increase in world-wide needs seems likely to be so rapid as to rule out any significant reduction in the American contribution. Second, it also seems undesirable, for reasons by now presumably obvious, to reduce imports by increasing tariffs and interfering with specialization and trade.

Would a more rapid increase in productivity help? It certainly would help if it occurred in industries making products that are capable of being exported or substituted for imports. One important factor explaining the rise of our imports relative to our exports is that our exportable products are no longer as attractive, compared with foreign alternatives, as they were even five years ago, whereas foreign imports have become more attractive relative to our domestic alternatives. So long as trade is relatively free, the world beats a path to the door of the nation that makes the better mouse trap. Right now the mouse traps of many foreign nations have become remarkably attractive, not only in the United States but in third countries.

But a "general" stepping up of the rate of increase in productivity is not necessarily favorable. To take an extreme case, suppose what appeared as a "general" increase actually occurred entirely in the production of goods incapable of being exported or substituted for imports. Then the resulting more rapid rise in living levels might lead to an increased demand for imports and a reduced availability of exports (as productive factors moved to more attractive domestic production), which would, of course, make balance of payments difficulties even worse. In short, a more rapid rate of increase in productivity for the economy as a whole is not necessarily helpful, but more rapid increases in industries producing exportable goods or substitutes for imports will aid in reducing an unfavorable balance of payments.

### The Basic Present Problem

Why basically do we have a problem? Why has not equilibrium been brought about by the mechanisms discussed in the last chapter? Let us restate certain fundamentals. Comparative advantage between countries is in a continuous state of change. The last chapter suggested that an economy could adjust to change by allowing exchanges to fluctuate with prices constant, by allowing prices to fluctuate with exchanges constant, or by some combination of the two. The essence of the present problem is that we want fixed exchanges but we do not want *prices to behave in such a way as to maintain fixed exchanges*. Specifically, by gold standard rules the export of gold in 1960 should have been accompanied by a decline in the quantity of money and in prices, so as to make the United States a better place in which to buy. But 1960 was also a year in which unemployment rose, a fact that, as Section IV will explain, makes an expansion of money and a rise in prices desirable to expand output and employment. But allowing money to expand and prices to rise while gold is leaving the country violates the rules of the gold standard and prevents equilibrium from being restored. Putting the matter in the simplest possible terms, in a changing world we can have *exchange stability and price flexibility* or we can have *price stability and exchange flexibility,* but we cannot—except by the accident of offsetting changes—have change, price stability, and exchange stability. In a dynamic world we cannot in fact avoid change; hence the practical problem becomes, in a nutshell, which is more important: exchange or price stability? Let us first consider the case for exchange stability.

### The Case for Exchange Stability

The first and most obvious argument for exchange stability is that fluctuating exchanges reduce the scope of trade and specialization by making trade more difficult to conduct. That this is so is not immediately clear. The risks to which traders are subject as a result of any given change are, as a first approximation, the same whether the adjustment to the change is made by movements of relative prices or rates of exchange. Specifically, if the adjustment to a given unfavorable balance of payments is by a decline in American prices and a rise in prices elsewhere, it is not clear that American importers will be hurt less than if an equivalent adjustment were to be achieved by a decline in the exchange value of the dollar.

On the other hand, it can be argued that price variations have to be faced in any event and that exchange variations introduce, if not an increase in overall risk, at least an *additional complication.* In practice, foreign exchange markets are highly organized, so that importers can convert current obligations to pay foreign currency into dollar obligations rapidly and easily. Moreover, when exchanges fluctuate, "forward" markets in exchange develop, just as there are "forward" markets in most important commodities. A "forward" exchange market permits an importer, with a foreign payment to make ninety days hence, to contract at a price fixed today to receive the foreign currency and pay for it in ninety days, thereby completely eliminating the entire risk of exchange variation during the intervening period. Thus fluctuating exchanges need not greatly increase the difficulty of conducting foreign trade. In the domestic economy, for example, millers manage to process products whose prices fluctuate daily (largely by the use of "forward" markets);

it is certainly *possible* for trade to be carried on while exchanges fluctuate.

But, even after allowance has been made for all these devices, it nonetheless seems likely that fluctuating exchanges will, on balance, make trade more difficult if only because they involve one more thing for traders to think about. In addition, transactions often require payments at times different from those to which the "forward" markets apply. Even more important, New York has, in recent years, come to be a depository for short-term funds of other nations—performing part of the role that was previously almost entirely discharged by London. Just as banks provide a way of holding individual reserves that is more convenient than keeping currency in a strongbox, so it is desirable for nations to have arrangements for holding short-term funds in forms other than gold. Moreover, although in the case of an importer the risk of fluctuating exchanges may simply replace the risk of fluctuating prices, holders of short-term funds are not normally subject to the risk of price fluctuations, so that they would be subjected by fluctuating exchanges to a previously nonexistent risk. Thus, overall, there would appear to be a general presumption in favor of exchange stability.

### Exchange Stability without Adjustment

But what happens if we have exchange stability but do not permit the gold standard rules to adjust exports and imports in response to inevitable changes in comparative advantage? So long as adjustment is not permitted, the foreign exchange market will behave exactly like any other market in which price is fixed at some point other than the level that balances supply and demand. There will, in short, either be a "surplus" equal to the excess of supply over demand when the price is fixed above the market level, or a "deficit" equal to the excess of demand over supply when the price is fixed below the market level. The fact that the forces bringing about adjustment were in the past permitted to operate has prevented our recognizing that exchange stability in general, and the gold standard in particular, are forms of price fixing.

Note that during the long period in the past when our current balance of trade was favorable—which involves a surplus of foreign currencies from our point of view or a "dollar gap" from the point of view of other nations—we were able to continue the fixed exchange rate only because we lent, gave away, or accepted gold in amounts equal to the surplus. In the same way preservation of our present exchange rate has been possible in the face of our recent deficit only because we have been shipping gold and receiving loans from foreigners in amounts equal to the deficit. Note also, in passing, that when we have a surplus and a favorable trade balance our living level is *lower,* and when we have a deficit and an unfavorable trade balance it is *higher,* than when our foreign accounts are in balance. In the first case we are lending what we could otherwise consume; in the second case foreigners are lending us part of our consumption.

## Problems Arising in the Absence of Adjustment

So respectable have stable exchanges become that efforts to "defend the dollar" against a deficit take on the characteristics of a crusade. One result is that advocates of protection at home and reductions in foreign aid have their cases strengthened. But, in addition, many new devices to interfere with trade are developed. For example, "quotas" are imposed, which place specific quantitative limitations on the amount of foreign goods that may be imported; they are, in general, more effective devices for interfering with trade than tariffs. Again, "exchange controls" are put into effect, which prohibit nationals from obtaining foreign exchange except in limited amounts or for specific purposes. And, finally, as these measures do not aid in bringing about the basic adjustments that are required, if the forces making the adjustments necessary persist, there will inevitably be periodic devaluations—which are nothing but reductions in the fixed price to a level more nearly in line with market forces. As the need for a devaluation can be foreseen and the devaluation can go only in one direction, shrewd speculators usually manage to anticipate devaluations and profit accordingly.

An agency that has recently been developed to deal with exchange difficulties is the International Monetary Fund. Its basic purpose is to eliminate the necessity for drastic adjustments to changes that are transitory in character, and especially to prevent speculation from intensifying such adjustments as must be made. What the Fund does is to make the continued preservation of a particular rate of exchange possible by lending to a country with an exchange deficit. But there is nothing that the Fund can do to bring about *basic* adjustments except to permit periodic devaluations. If one country, for example, runs its economy in such a way that prices increase much more rapidly than elsewhere, the existence of the Fund will not be able to prevent repeated devaluations of that country's currency. All the Fund can do in such cases is to provide procedures for devaluation that minimize the likelihood of competitive or retaliatory devaluations by other countries.

### The Case for Exchange Flexibility

Obviously an economy with fixed exchanges that is unwilling to allow prices to adjust faces problems. Is there any reason for going to the other extreme and allowing exchange rates to fluctuate freely? A main argument of those who advocate such a solution is that fluctuations in exchange rates would move the economy toward equilibrium in its balance of payments without further decisions having to be made. Freeing exchanges, they argue, would therefore eliminate or greatly reduce the pressure for tariffs, reductions in foreign aid, quotas, exchange controls, and periodic devaluations. We would, in other words, no longer live in a world in which Americans are urged one year to travel abroad and spend lavishly to reduce the "dollar gap" and the next to stay at home or travel economically to reduce the "dollar drain." Fluctuating exchanges would also eliminate, or in our case prevent the development of, the large bureaucracy that inevitably grows up to administer the controls established as a part of the effort to defend a currency against devaluation. Even the wide swings between nations of short-term balances in search of speculative profits, which have caused such difficulties for the monetary authorities in recent years, would, advocates contend, be greatly reduced in importance. For speculating on devaluation is, in many cases, speculating on a "sure thing"; with free exchanges there would be speculators on both sides of the fence. In short, those favoring free exchanges argue that, if price changes are used to bring equilibrium to other markets when conditions change, why should not changes in exchange rates be allowed to restore equilibrium when, in a dynamic world, there are alterations in comparative advantage? To the extent that a free market is *generally* desirable, why should it not also be the best device for achieving equilibrium in the balance of payments if we are unwilling to play according to the rules of the gold standard?

But can we not play according to the gold standard rules? Actually economies today object strongly to only half of the rules, for the rules provide for rises and *declines* in prices to restore balance. During the nineteenth century declines in prices were far more acceptable than they are today—partly because, in the absence of an organized labor movement, costs as well as prices fell during deflations, but also because price declines at that time do not seem to have been accompanied by as drastic reductions in economic activity and employment as in recent years. We have, moreover, become more and more concerned with preventing unemployment and have given our monetary authorities increased power to divorce gold outflows from price declines rather than run the risk that declines will lead to unemployment. There is, on the other hand, no comparable resistance to price increases. As a result, gold inflows have been far more effective in raising prices than gold outflows have been in lowering them. There has, in short, been a ratchet effect in operation in which the general level of prices can go only in an upward direction. Thus those advocating free exchanges argue that any effort to achieve adjustment by applying the gold standard rules under modern conditions will inevitably lead to unemployment or inflation.

## Some Overall Conclusions

There is much to be said for a general system of fluctuating exchanges. If such a system were adopted, economies might well adjust to changing conditions by gradual movements in exchange rates rather than by periodic crises, which would in turn eliminate the pressure that crises generate for reductions in foreign aid, tariffs, quotas, and exchange controls—to say nothing of periodic devaluations when other measures fail. It would also greatly reduce the administrative efforts of the government, not only at the operating level in connection with the controls likely to be established but also at the policy level, where high government officials better employed at other tasks now have to devote a great deal of energy to devising measures for defending their currency when it is overvalued—and almost as much energy to ways of getting rid of the surplus when it is undervalued. Most important of all, it would free the monetary and fiscal authorities so that they could concentrate entirely on achieving policies designed to maximize employment, minimize inflation, and increase productivity. How these objectives can be achieved is discussed in Sections III and IV; we shall see that desirable policies often differ from those necessary to maintain a particular fixed exchange rate.

In my judgment, because of the importance of concentrating on achieving these objectives, free exchanges appear, on balance, desirable, *provided there is general acceptance of free exchanges*. If the establishment of free exchanges were to lead other nations to retaliate, whenever one country's exchange declined, by a variety of direct controls designed to "equalize" the competition of "cheap" goods, much of the benefits of free exchanges outlined above would, of course, be lost. That this is what might happen is certainly possible; since World War II the whole emphasis of international monetary arrangements in general, and the International Monetary Fund in particular, has been on facilitating the maintenance of *fixed exchanges*. It is doubtful if free exchanges would receive the approval of a majority of economists and practically certain that they would be condemned by a majority of international bankers and businessmen. And, as already suggested, there is no doubt that free exchanges, by subjecting short-term balances to additional risks, would reduce international specialization in banking and increase the extent to which short-term balances would be held in the form of gold. It can also be argued that, while the Cold War lasts, a fluctuating dollar would appear in the minds of many to be a less desirable currency than a solid gold ruble. But, because the gold ruble has so little actual significance, we cannot possibly keep up with the Russians if they want to make the ruble appear a "better" currency by increasing its nominal gold content; in such a competition, a dollar that both *rose* and fell in relation to other currencies might make as much sense as one whose gold content, though constant, fell in relationship to a ruble increasingly valuable in terms of gold.

Compromise solutions are possible. Even if price declines are ruled out, relatively more rapid price increases in countries with an exchange surplus would contribute to the achievement of equilibrium; they are therefore obviously desirable unless the inflation they entail is unacceptably rapid. In the other direction, if exchange rates were allowed to *appreciate* or depreciate more frequently within the framework of the International Monetary Fund—such as the 5 percent appreciation of the German mark early in 1961—variations in exchange rates would be used to move economies experiencing changes in comparative advantage toward equilibrium without as drastic an alteration of present arrangements as would be involved in freely fluctuating exchanges. Perhaps, overall, two things are vital: on the one hand, far more fundamentally important objectives must not be subordinated to the defense of particular fixed exchange rates; on the other hand, such actions as are taken should be taken with the agreement of at least a substantial part of the international financial community so as not to risk the hard-won international cooperation that has been achieved since World War II.

# 24 The Role of Government

## The Importance of Government Purchases

Chapter 9 pointed out, first, that close to one quarter of our production objectives are established by government spending and, second, that government spending has two aspects: it may result in the use of productive factors for governmental purposes, thereby reducing the amount available to meet other needs; or it may transfer income from Peter to Paul without in the process absorbing productive factors. The extent to which government utilizes or absorbs factors can be shown, as is done in Table 24-1, by comparing the value of government purchases of goods and services with the national income.[1]

All governments together in 1929 utilized less than 10 percent of total production. By 1939, largely under the impact of the Great Depression, the percentage had about doubled. After reaching 53 percent during World War II, it again stood at the 1939 level in 1949. The Korean crisis brought a new peak of 27 percent, which declined to 24 percent in 1960.

The overwhelming proportion of the increase has resulted from the expansion of defense purchases. Probably not more than one half of 1 percent of the national income went for defense in 1929, contrasted with 11 percent thirty years later. Of the overall increase of 14.4 percentage points during the period, 10.5 percentage points, or three quarters of the increase, were caused by the expansion of defense purchases. In fact,

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[1] The reason why purchasing is compared with the national income rather than the net national product was explained in Chapter 9.

TABLE 24-1

The Importance of Government Purchases

(Dollar amounts in billions)

| | | Federal | | | State and Local | | Total |
|---|---|---|---|---|---|---|---|
| Year | National Income | Total | Percent of Income | National Defense | Total | Percent of Income | Percent of Income |
| 1929 | 87.7 | 1.3 | 1.5 | N.A. | 7.2 | 8.1 | 9.6 |
| 1934 | 49.0 | 3.0 | 6.1 | N.A. | 6.8 | 13.9 | 20.0 |
| 1939 | 72.8 | 5.2 | 7.1 | 1.3 | 8.2 | 11.3 | 18.4 |
| 1944 | 182.6 | 89.0 | 48.7 | 88.6 | 7.5 | 4.1 | 52.8 |
| 1949 | 217.7 | 22.2 | 10.2 | 13.6 | 17.9 | 8.2 | 18.4 |
| 1953 | 305.6 | 58.0 | 19.0 | 49.3 | 24.9 | 8.1 | 27.1 |
| 1960 | 417.1 | 52.9 | 12.7 | 45.5 | 47.2 | 11.3 | 24.0 |

SOURCE: *Survey of Current Business*, July, 1961.

nondefense federal purchasing has increased only from perhaps 1 to 1.7 percent since 1929, and is today less than it was in 1939. Even state and local purchasing is no higher than in 1939, though it is 3 percentage points higher than it was in 1929. The increase in defense purchasing, however unfortunate, is hardly controversial. A debate continues as to whether or not we spend enough on defense. This is primarily a military matter and therefore not a subject on which economics has anything special to contribute except in connection with the contention that we cannot "afford" to spend more. Suppose we consider instead what we can "afford" to spend in connection with nondefense purchasing; for, if we can "afford" an increase in nondefense purchasing, almost everyone will agree that we can "afford" an increase in defense purchasing.

### The Role of Government under Laissez Faire

Chapter 9 examined the case for and against the establishment of production objectives by consumer spending. Let us now examine the case for and against the establishment of production objectives by government purchasing, especially nondefense purchasing. To the strict believer in laissez faire, production objectives determined by consumer spending are clearly "superior" to those established by government purchasing; for the former are the *only* objectives that are clearly established "voluntarily." Any other way—such as the imposition of taxes by majority vote at a town meeting and the spending of the resulting revenues for roads—is felt to be inherently "inferior" because the element of "compulsion" may be present, in the sense that someone at the town meeting may not have wanted to pay taxes for roads. It does not follow that there should be no government whatsoever; even the most extreme adherents of laissez faire believe that there are certain functions that government must perform—particularly maintaining domestic law and order and defending the country against foreign aggression. But it does follow, from the laissez-faire point of view, that the best government is the least government, for the least government involves the least interference with superior production objectives.

It is easy to point out that this leads to some rather remarkable results. It implies, for example, that a dope peddler is catering to a superior objective, whereas a scientist seeking a cancer cure while working for the Public Health Service is catering to an inferior objective. Some extremists meet this sort of example by conceding society the right to prohibit certain types of production. But this concession is a Pandora's box: If to prohibit, why not impede by heavy taxation? Or encourage by subsidy?

Actually the basic question is in what sense objectives established by consumer spending are "superior" to those established in other ways. To say that the former are established "voluntarily" and the latter by "compulsion" does not help. Any society—defined as a group of people living together—inevitably involves some compulsion; perhaps the last person whose social decisions were completely "voluntary" in the sense that he was able to do exactly as he wanted without regard to anyone else was Robinson Crusoe before Friday turned up. Does it follow that his situation was ideal? The point is that an individual may quite voluntarily agree to accept certain decisions of the majority—even if he knows he will disagree with some of them—because *overall* he gets benefits that are much superior to anything he could otherwise obtain. In such circumstances what sense does it make to say that the benefits must be "inferior" because he is compelled to take the good with the bad? The student should be warned that this is a subject that raises strong emotions among economists as well as between liberals and conservatives; few subjects in economics are more hotly debated today than the proper role of government. But, in my judgment, there does not seem to be any rational basis for arguing that production objectives established by consumer spending are *inherently* superior to those determined by the will of a democratic majority.

To the extent that this is correct and no inherent superiority is involved, then the appropriate balance between government purchasing and private spending will be achieved when production resulting from marginal consumer spending yields the same social satisfaction as production resulting from marginal government purchasing. In cases where certain things can best be provided by government, this appears to be the *only* way that appropriate balance between *all* alternative uses of resources can be achieved; to give priority to either private spending or public purchasing will inevitably distort the very overall balance of factor use on which advocates of laissez faire lay the greatest stress. When streets are dirty and houses clean, why should preference be given to private spending on vacuum cleaners rather than to public purchase of street-cleaning machinery to keep the dirt from coming in the window in the first place? Vice versa, when houses are dirty and streets clean, what possible reason would there be for favoring street cleaning?

## How Much Government Can We Afford?

Some who may agree that, in general, marginal social worth should be the basis for choosing between public purchasing and private spending nonetheless argue that there are special reasons for preferring private spending. One crude argument is that only "business" creates income and wealth. This statement has no meaning to an economist. What meaning is there in arguing that a beauty parlor creates income and a public school does not? Again it is sometimes argued that taxes on business pay for government purchasing, so that without business government purchasing would be impossible. But taxes on business pay for only part of government spending; the rest is financed by taxes on income recipients, and, in theory at least, there is no reason why *all* government purchasing cannot be financed by taxes on individuals. It may be argued, of course, that business provides the income that makes taxes on individuals possible. But it makes just as much sense to argue that consumers provide the spending that makes business possible! In short, these sorts of hen-and-egg arguments may make good debating points but they make no economic sense.

On a quite different level is the argument that we cannot "afford" more than a certain amount of public purchasing because of possible repercussions on the private sector of the economy. If certain necessities of life are provided privately, it is obvious that there is a point below which private spending cannot go if life is to be sustained. But, equally obviously, this has little or no relevance to the present situation in the United States. It is estimated that Russian production is not much more than one third that in the United States and that only half of Soviet production is devoted to consumption in contrast to perhaps two thirds in America.[2] On this basis our production of consumption goods would appear to be four times as large as that in the Soviet Union. Even allowing for considerable error in these estimates and making some concessions to the argument that we have become so accustomed to "luxury" that we would have difficulty doing without it, it seems hard to deny that considerable reductions in consumption are possible without repercussions on essential living levels or on our ability to produce. Those who dislike comparisons with Russia may prefer to recall that we are today consuming perhaps twice as much as we consumed as late as 1939 or during World War II. In short, the social benefit today provided by either marginal government purchasing—say, parts of the farm program or the typical river and harbors bill—or marginal private spending —say, fancy hotels in Miami or gambling casinos in Reno—is hardly high, so that shifts in either direction would seem possible without immediately impinging on anything that can appropriately be called "essential."

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[2] Consumption in the United States includes things which the government supplies in the Soviet Union. This estimate for the United States is designed to be comparable with the figure for the Soviet Union and therefore differs from the percentage previously mentioned.

## Government Purchasing and Economic Development

A final argument is that an expansion of government purchasing will retard economic development. So stated the argument is simply false. We shall see in Section III that improved technology has been the most important single factor in economic development; there seems little doubt that the most important factor in improving technology is research, broadly defined. Government today pays for about 60 percent of all research. It is nonsense to say that increased government spending on research will inevitably retard economic development whereas increased private spending on miracle facial creams inevitably promotes development.

What most people have in mind when arguing that an increase in government purchasing will retard economic development is that the taxes required will either reduce saving or make people work less hard. Again, as stated, the argument is meaningless. Some types of government spending involve capital formation and therefore constitute "saving" according to any meaningful definition of the term; a new road adds to our capital stock quite as much as does a new railroad.[3] And some

[3] Note again that the road will not add to the future national income whereas the railroad will. But the reason is simply that the national income estimators have not found a way of measuring the road's contribution, and not that it does not make a contribution. Even the subsidiary argument that roads will require additional future taxes for maintenance whereas railroads will be "self-sufficient" no longer has meaning when roads are sometimes financed by tolls paid to "self-sufficient" authorities, and commuter railroads apply for government subsidies!

kinds of taxes—such as sales or excise taxes—are quite unlikely to have noticeable repercussions on saving. Moreover, as already noted, if the government imposes taxes on those not likely to save and uses the proceeds to reduce the public debt, the result may well be an increase in *private* capital formation. The amount of saving is likely to be significantly reduced only when the government pays for its current needs by taxes that bear heavily on the top 10 percent of income recipients who are responsible for almost all personal saving. It follows that no *general* statement as to the effect of government spending on capital formation can be made; any meaningful conclusion involves a comparison of the public or, in the case of debt retirement, the private capital formation resulting from public spending with the repercussions on private saving of the particular taxes imposed.

What of the effect of taxation on worker effort? In Chapter 20 it was suggested that further efforts to redistribute income might have repercussions on incentives and that, if such repercussions were to slow down economic development by even a small amount, the gains from redistribution would rapidly be more than offset by the slower rate of development. There is no doubt that, if a considerable expansion of government spending were financed entirely by an increase in the taxation of those with large incomes, the increase in spending might well result in a slowing down of development. But, as Table 24-4 will demonstrate, only 30 percent of all government revenue is raised by direct taxation of personal incomes. Moreover, it seems likely that at least two thirds of personal income taxes are paid by people whose incentives are substantially unaffected by the impact of such taxes. To the extent that this estimate is correct, it suggests that perhaps 90 percent of government revenues are raised in ways that are rather unlikely to impair incentives.

Does this overstate the case? One can argue that incentives are impaired by any sort of taxation. But the argument is not particularly persuasive. There has been a steady increase in the excise taxes levied on tobacco and gasoline, but sales have continued to rise steadily. Is it convincing to argue that an increase in such taxes will cause people to work less hard when the increase has not even caused them to buy less tobacco and gasoline? In short, it is by no means clear that an expansion of government purchasing will necessarily have repercussions on incentives.

### Nondefense Government Purchasing

We have so far been concerned with the general case for and against public purchasing of goods and services. Keeping in mind that 45 percent of total government purchasing and over 85 percent of federal purchasing are for defense, let us concentrate on nondefense purchasing. We shall first want to examine such purchasing in somewhat greater detail and then turn to a consideration of government spending as a whole. Table 24-2 summarizes nondefense purchasing in 1960 by federal, state, and local governments.

TABLE 24-2

Nondefense Government Purchasing in 1960[a]

(Dollar amounts in billions)

| | Federal | Percentage of Federal | State and Local | Percentage of State and Local | Total Government | Percentage of Total Government |
|---|---|---|---|---|---|---|
| General government[b] | 1.5 | 21 | 8.5 | 18 | 10.0 | 19 |
| Education | 0.3 | 3 | 17.7 | 38 | 18.0 | 33 |
| Highways | 0.1 | 1 | 8.8 | 19 | 8.9 | 16 |
| Health and sanitation | 0.3 | 4 | 5.7 | 12 | 6.0 | 11 |
| Natural resources[c] | 1.8 | 24 | 1.5 | 3 | 3.3 | 6 |
| Other welfare[d] | 0.5 | 7 | 1.6 | 4 | 2.1 | 4 |
| Other commerce | 1.1 | 15 | 1.0 | 2 | 2.1 | 4 |
| Public utilities | — | — | 1.5 | 3 | 1.5 | 3 |
| Agriculture | 0.6 | 8 | 0.6 | 1 | 1.2 | 2 |
| Veterans' benefits | 1.2 | 16 | — | — | 1.2 | 2 |
| International affairs | 0.7 | 9 | — | — | 0.7 | 1 |
| Less: Government sales | −0.6 | −8 | — | — | −0.6 | −1 |
| Total | 7.4 | 100 | 46.9 | 100 | 54.3 | 100 |

[a] Totals do not always add due to rounding.
[b] Including police, fire, and prisons.
[c] Excluding conservation of agricultural resources.
[d] Including housing and community redevelopment.
SOURCE: *Survey of Current Business*, July, 1961.

Of all productive factors absorbed by government for nondefense purposes, one third was for education and one sixth for roads, so that between them these two items accounted for about half of total nondefense purchasing and almost 60 percent of state and local purchasing. If general government and health and sanitation (predominantly street cleaning, sewerage, and garbage disposal) are added, these four categories accounted for close to 80 percent of total purchasing and over 85 percent of state and local purchasing. The main reason for the importance of these relatively conventional activities is that they actually utilize or absorb large amounts of productive factors. Most of the activities sometimes described as resulting in a "welfare state" involve transfer payments, not purchases. All welfare activities, including social security and other welfare services, account for only about 4 percent of all government purchasing; even such controversial programs as veterans' benefits, agricultural aid, and foreign contributions are responsible for only a little over 5 percent of all government purchasing. It seems fair to conclude that, even today, most government *purchasing* is for quite conventional purposes despite the expansion of the "welfare state."

### Nondefense Government Spending

Note that federal nondefense purchasing absorbed less than 2 percent of the national income in 1960; even if defense purchasing of $45.5 billion is added, we have a total of less than $53 billion. How can this be reconciled with a federal budget of almost $93 billion in that year? Transfer payments are the answer, as Table 24-3 makes clear. Old-age,

TABLE 24-3

Government Spending in 1960 [a]

(Dollar amounts in billions)

| | Federal | State and Local | Total Government | Percentage of Nondefense Spending |
|---|---|---|---|---|
| Nondefense purchasing | 7.4 | 46.9 | 54.3 | 56 |
| Old-age and retirement benefits | 12.1 | — | 12.1 | 13 |
| Veterans' benefits | 4.4 | 0.1 | 4.5 | 5 |
| Unemployment benefits | 2.9 | — | 2.9 | 3 |
| Public assistance and relief | — | 3.4 | 3.4 | 3 |
| Net interest paid | 7.0 | 0.7 | 7.8 | 8 |
| General government | 1.0 | 1.5 | 2.4 | 2 |
| Foreign assistance transfers | 1.6 | — | 1.6 | 2 |
| All other transfers | 0.5 | 0.1 | 0.6 | 1 |
| Grants to state and local governments | 6.0 | — | 6.0 | 6 |
| Net subsidies to government enterprises | 3.0 | −2.4 | 0.6 | 1 |
| Nondefense spending | 45.9 | 50.3 | 96.2 | 100 |
| Defense spending | 46.9 | 0.3 | 47.1 | |
| Total | 92.8 | 50.6 | 143.3 | |

[a] Totals do not always add due to rounding.
SOURCE: *Survey of Current Business*, July, 1961.

veterans', and unemployment benefits financed by federal taxation alone amounted in 1960 to $19.5 billion. If we add public assistance and relief provided by state and local governments and general government transfers (which are largely for the benefit of government employees), the total is over $25 billion. These five items combined, amounting to 26 percent of total nondefense spending, represent the fiscal impact of the "welfare state."

The relative importance of the five categories is worthy of note. Including old-age benefits paid in connection with general government transfers, probably about half of all benefits go to those who have retired. The basic program, known as Old-Age and Survivors Insurance, is run by the federal government. Over 90 percent of those in the labor force are covered; at retirement (generally at age sixty-five for men and sixty-two for women) benefits are paid, as a matter of right rather than of need, depending on the individual's past contributions collected by payroll taxes. Veterans' benefits, also overwhelmingly a federal program, are next in quantitative importance, but are obviously of rather special significance. Unemployment compensation, on the other hand, is a state-run program encouraged by a federal payroll tax, the proceeds of which are returned to states that have programs meeting certain minimum requirements. As before, insurance is involved: those who are unemployed may draw, as a matter of right, benefits for a period that, until recently, was typically twenty-six weeks but has now been generally extended to thirty-nine weeks. Old-age and unemployment insurance are the main components of the "social security" program inaugurated by the New Deal in the middle thirties.

Those who do not qualify for social security may apply for "public assistance," or relief, on the basis of demonstrated need. Perhaps the most important aspect of relief is that it is highly erratic. In New York City a family with a large number of children may qualify for relief payments that are larger than the city pays those starting in as firemen or garbage collectors. As a result, it is often charged that many stay on relief for extended periods, finding ways to avoid, or to get fired from, any jobs that are offered. On the other hand, many who might qualify for it do not do so—either because they are unwilling to accept relief or because they do not know how to apply so as to meet prevailing requirements. In smaller communities the results are likely to be even more erratic, ranging from quite adequate provision for local residents to little or no provision for anyone. Only for certain special types of assistance—involving those not qualifying for Old-Age Insurance, dependent children, or those blind or permanently disabled—does the federal government help in meeting relief costs by matching the contributions of state and local governments; in all other cases relief costs are entirely met by states and localities.

There are two other important kinds of transfer payments: federal grants to state and local governments (which in one sense do not belong in the spending column as they in effect represent the substitution of federal taxation for taxation that would otherwise have to be imposed by state and local governments), and interest payments. These two items between them amount to almost $14 billion, while miscellaneous transfers, including payments in connection with foreign economic aid, bring the overall total to $16.5 billion.

In general, spending that includes transfer payments should not be compared with the national income, for such payments do not absorb productive factors. To get an idea of relative size, however, it is worth noting that total government spending, including transfers, is currently running at a level equal to one third of the national income. For some purposes—such as determining the possible effect of taxation on saving and effort—total spending rather than total purchasing may be most important. If the government, for example, taxes a rich Peter in such a way as to reduce his saving or his effort in order to provide benefits to several poorer Pauls, the net effect may be to reduce the rate of economic development even if the government makes a pure transfer payment and absorbs in the process no productive resources whatsoever. Let us turn next, therefore, to the way in which governments pay for their immense spending.

## Sources of Government Revenue

Table 24-4 summarizes the sources of revenue of both the federal and state and local governments for the year 1960. Let us start with the consolidated total in order to appraise the overall impact of taxation. Almost half of all revenue is raised by direct taxes on incomes, corporate profits, and estates and gifts. Sales and excise taxes of all sorts are the next most important source of revenue, accounting for 16 percent of the total, compared to 14 percent for social security taxation and 11 percent for the property tax. All other sources of revenue, including federal grants, provide only 12 percent of total receipts.

As already noted, federal grants to state and local governments involve double counting; if the taxes from which the grants are paid had been imposed by state and local rather than by the federal government, the grants would not have appeared in the table. Social security taxes are, of course, earmarked to pay social security benefits. If we exclude these two sources of revenue, in order to concentrate on tax revenues to meet general government spending, then direct taxes would have raised

### TABLE 24-4

### Sources of Government Revenue in 1960[a]

(Dollar amounts in billions)

| | Federal | Percentage of Federal | State and Local | Percentage of State and Local | Total Government | Percentage of Total Government |
|---|---|---|---|---|---|---|
| Income taxes[b] | 41.3 | 43 | 2.6 | 5 | 43.9 | 30 |
| Estate and gift taxes[b] | 1.8 | 2 | 0.5 | 1 | 2.2 | 2 |
| Corporate profits taxes | 21.2 | 22 | 1.2 | 2 | 22.3 | 15 |
| Taxes on liquor | 3.2 | 3 | 0.7 | 1 | 3.8 | 3 |
| Taxes on tobacco | 2.0 | 2 | 1.0 | 2 | 3.0 | 2 |
| Other sales and excise taxes | 7.1 | 8 | 9.0 | 19 | 16.1 | 11 |
| Social security taxes | 17.7 | 18 | 3.0 | 6 | 20.7 | 14 |
| Property taxes | — | — | 15.9 | 32 | 15.9 | 11 |
| Motor vehicles licenses | — | — | 1.6 | 3 | 1.6 | 1 |
| Customs duties | 1.1 | 1 | — | — | 1.1 | 1 |
| Miscellaneous | 0.7 | 1 | 7.7 | 16 | 8.4 | 6 |
| Federal grants | — | — | 6.1 | 13 | 6.1 | 4 |
| Total | 96.0 | 100 | 49.2 | 100 | 145.2 | 100 |

[a] Totals do not always add due to rounding.
[b] Net of federal refunds.
SOURCE: *Survey of Current Business*, July 1961.

almost 60 percent of the total, excise taxes almost 20 percent, property taxes about 13 percent, and all other taxes under 10 percent.

There are sharp differences between federal and state and local sources of revenue. Again excluding social security taxes, about 82 percent of federal revenues were raised by direct taxation, with the personal income tax alone responsible for more than half of all federal revenues. In contrast, again excluding federal grants and social security taxes, the state and local governments raised little more than 10 percent of their revenues by direct taxation, compared with almost 40 percent by means of the property tax, somewhat more than 25 percent by excise and sales taxes, and somewhat less than 25 percent by all other sources of revenue.

### The Distribution of the Total Tax Burden

Let us next turn to the distribution of the overall tax burden. Table 24-5 presents estimates by Professor Richard Musgrave of the

TABLE 24-5

Effective Tax Rates as a Percentage of Income in 1954

Spending Unit Income Bracket

| | Under $2,000 | $2,000–$3,000 | $3,000–$4,000 | $4,000–$5,000 | $5,000–$7,500 | $7,500–$10,000 | Over $10,000 | Total |
|---|---|---|---|---|---|---|---|---|
| Federal Taxes | | | | | | | | |
| Personal income[a] | 3.1 | 5.3 | 7.1 | 8.4 | 11.5 | 14.2 | 16.0 | 11.0 |
| Corporate profits | 3.7 | 3.8 | 3.3 | 3.2 | 3.6 | 4.1 | 14.1 | 6.2 |
| Excises and customs | 5.3 | 4.8 | 4.3 | 4.1 | 3.8 | 3.5 | 2.0 | 3.6 |
| Subtotal | 12.1 | 13.8 | 14.7 | 15.8 | 19.0 | 21.8 | 32.1 | 20.9 |
| Social insurance | 3.6 | 4.1 | 4.4 | 4.2 | 3.2 | 2.4 | 1.1 | 3.0 |
| Total | 15.7 | 17.9 | 19.1 | 20.0 | 22.2 | 24.2 | 33.2 | 23.8 |
| State and Local Taxes | | | | | | | | |
| Direct[b] | 0.2 | 0.3 | 0.3 | 0.3 | 0.6 | 0.7 | 1.8 | 0.8 |
| Excise and sales | 5.7 | 5.1 | 4.6 | 4.4 | 4.2 | 3.8 | 2.2 | 3.9 |
| Property | 4.8 | 4.3 | 4.1 | 4.1 | 3.8 | 3.6 | 3.4 | 3.8 |
| Subtotal | 10.7 | 9.7 | 9.1 | 8.9 | 8.4 | 8.1 | 7.4 | 8.5 |
| Social insurance | 0.5 | 0.7 | 0.7 | 0.9 | 0.7 | 0.6 | 0.3 | 0.6 |
| Total | 11.2 | 10.4 | 9.8 | 9.8 | 9.1 | 8.8 | 7.7 | 9.1 |
| All taxes except federal personal income | 23.8 | 23.0 | 21.8 | 21.4 | 19.8 | 18.8 | 24.9 | 21.9 |
| All taxes except social insurance | 22.8 | 23.5 | 23.8 | 24.7 | 27.4 | 29.9 | 39.5 | 29.4 |
| All taxes | 26.9 | 28.3 | 28.9 | 29.8 | 31.3 | 33.0 | 40.9 | 32.9 |

[a] Includes estate and gift taxes.
[b] Includes estate, gift, and corporate profits taxes.

SOURCE: R. Musgrave in *Federal Tax Policy for Economic Growth and Stability*, Papers Submitted by Panelists Appearing before the Subcommittee on Tax Policy of the Joint Committee on the Economic Report (Washington: Government Printing Office, 1955), p. 98. Totals do not always add because of rounding errors.

percentage of income paid in various taxes by spending units classified according to income. We do not have the information to make such estimates with great accuracy. Particularly difficult is the treatment of taxes on corporate profits: there is simply no definitive answer as to where the burden or "incidence" of such taxes falls. The estimates presented assume that part of the incidence falls on consumers as a result of higher prices charged by corporations and part on corporate owners as a result of lower profits. If the full burden were assumed to fall on owners, the tax structure would be considerably more progressive; but if the full burden were assumed to fall on consumers, the structure as a whole would not, on balance, be progressive at all.

If we accept Professor Musgrave's assumptions, which represent a compromise between the two extremes, it follows that the overall impact of taxation was barely progressive up to incomes of $4,000–$5,000—rising by 3 percentage points overall and 2 percentage points if social insurance taxes are excluded. From $4,000–$5,000 to $7,500–$10,000 there was a further increase in progressiveness—amounting to 3 percentage points overall and as much as 5 percentage points with social insurance taxes excluded. Over the entire range the increase was 6 percentage points for the impact of all taxes and 7 percentage points when social insurance taxes are excluded. Only in the final bracket, involving incomes over $10,000, are taxes significantly progressive; in that bracket, compared with the average for all brackets, all taxes are 8 percentage points higher and all taxes excluding social insurance taxes, 10 percentage points higher. Overall, taxes take 27 percent of the income of those with incomes under $2,000 and 41 percent of the incomes of those with incomes over $10,000.

Note that the progressiveness of the overall tax structure is caused primarily by federal taxation of personal incomes; the burden of all other taxes falls steadily as incomes rise to $10,000, with the overall decline amounting to 5 percentage points. The rise thereafter on those with incomes over $10,000 results entirely from the assumed impact on the highest income bracket of corporate profit taxes. Note, finally, that the burden of state and local taxation is regressive (falls most heavily on those with the lowest incomes) throughout its entire range.

Suppose we relate tax burdens to the receipt of income by three broad income classes, as is done in Table 24-6. Let us concentrate on all taxes. The 55 percent of all income recipients with incomes under $5,000 in 1955 received 28 percent of total income and paid in taxes around 29 percent of the income they received. In absolute terms their average income was around $2,900, of which they paid $835 in taxes; as a group they accounted for 24 percent of all taxes paid. Next, the

TABLE 24-6

Distribution of Spending Units and Income in 1955 with Estimated Average Rates of Taxation

| | Spending Units (Percentage of all units) | Aggregate Income (Percentage of all income) | State and Local Taxes (As percentage of income) | All Taxes except Federal Personal Income (As percentage of income) | All Taxes (As percentage of income) |
|---|---|---|---|---|---|
| Under $5,000 | 55.2 | 28.2 | 10.1 | 22.1 | 28.9 |
| $5,000–$10,000 | 35.4 | 42.6 | 9.0 | 19.4 | 31.9 |
| Over $10.000 | 9.4 | 29.2 | 7.7 | 24.9 | 40.9 |

SOURCE: *Survey of Current Business*, July, 1959, and Table 24-5.

35 percent of all income recipients who had incomes between $5,000 and $10,000 received 43 percent of total income and paid in taxes around 32 percent of the income they received. In absolute terms their average income was around $6,800, of which they paid $2,170 in taxes; as a group they accounted for 40 percent of all taxes paid. Finally, the 9 percent of all income recipients with incomes over $10,000 received 29 percent of total income and paid in taxes about 41 percent of the income they received. In absolute terms their average income was around $17,500, of which they paid $7,160 in taxes; as a group they accounted for almost 36 percent of all taxes paid. Thus taxes take 29 percent of the incomes of those with $2,900, 32 percent of the incomes of those with $6,800, and 41 percent of the incomes of those with $17,500.

### Some Conclusions regarding the Role of Government

Government purchases measure the extent to which the government utilizes scarce productive factors. Of total purchases at the present time, around 45 percent are for defense; this portion of purchases may be unfortunate but it is hardly controversial. Of the remainder, perhaps 80 percent is for "basic" services, including education, roads, general government, health, and sanitation; it follows that the percentage of the national income spent by the government on "additional" objectives at the present time is rather small. Should we spend more? There are certain areas where an expansion appears essential. Section III, for example, will argue rather strongly for additional government activity in behalf of research and development. But there are also areas—such as much of current agricultural aid—where the government might usefully contract its activities. What seems important is not a general answer to the question of expanding or contracting government purchases but a willingness to examine each individual case on its merits.

Can we afford to proceed in this way? Would not an expansion of government activity endanger the effective operation of the private economy? Government purchases, in fact, do not fairly measure the full impact of government at the present time, for "welfare" transfers raise total government spending to a third of the national income. Can we afford such large expenditures? Although the percentage may seem high, the amount of redistribution involved is not. Overall, our tax structure is not particularly progressive. State and local taxes are regressive: those with incomes under $2,000 pay 11 percent in taxes, while those with incomes over $10,000 pay less than 8 percent. In the case of all taxes except income taxes, those with incomes between $5,000 and $10,000 pay least, while those with incomes over $10,000 pay only slightly more than those with incomes under $5,000. Finally, taking the broadest case of all taxes including income taxes, of the $7,160 levied against those with incomes over $10,000, $5,060 would have been paid if assessment had been made at the rate applying to those with incomes under $5,000. In short, a sixfold increase in average income—from $2,900 to $17,500—was accompanied by a relative increase in total tax burden of 12 percentage points—or $2,100 in absolute amount.

Note the contrast between the present emphasis on the lack of overall progressiveness of our tax structure and the emphasis of Chapter 20 on the dangers and limitations of further efforts at redistribution. The difference is that Chapter 20 was primarily concerned with further redistribution from those with incomes in excess of, say, $25,000. The broad conclusions reached were that today relatively little consumption is accounted for by those with incomes over $25,000 and that the levels of taxation applying to incomes over $25,000 are sufficiently high to make repercussions on effort and saving probable if significant further redistribution were to be attempted. On the other hand, in my judgment, the rates of taxation presently prevailing are quite unlikely to have had *noticeable* repercussions on effort or saving by those with incomes under $10,000, and rather unlikely to have had *significant* repercussions on those with incomes below $25,000.

If it is correct that those with incomes below $25,000 are not appreciably affected by the present level of taxation, two further conclusions appear to follow: first, a considerable increase in government spending, if it is felt to be socially desirable, appears possible without repercussions on effort and saving, provided the revenue is raised by an increase in taxes other than the income tax or even by an increase in income taxation of those with incomes below, say, $15,000; second, redistribution of the tax burden among those with incomes under $15,000 appears possible without repercussions on effort and saving if it is felt to be socially desirable to provide more income to those at the lower end of the income scale.

# 25

# The Problem of Agriculture

## The Historical Setting

At the time of the Census of 1790 94 percent of the population was rural. By 1950 less than 17 percent of our population lived on farms, and today the figure is around 11 percent. In addition, only 8 percent of the labor force is now engaged in agriculture, receiving for its efforts only 4 percent of the national income. Actually, long-range comparisons of this sort exaggerate the change that has taken place. Many of the operations that once took place on a self-sufficient farm, as products moved from production to consumption, are today performed off the farm by specialized industries such as food processing or even textiles and apparel. In other words, not all the efforts of those reported as farmers in 1790 were devoted to producing and processing products *to the state in which they now leave our specialized farms.* Just how much is hard to estimate. This same problem arises when attempts are made to compare "developed" and "underdeveloped" countries at the present time; there appears to be no way to make this sort of comparison with any degree of precision over long periods of time or between countries with widely differing degrees of development.[1]

Changes in agriculture over the last fifty years, on the other hand, can be measured with considerable precision. Two periods must be distinguished. During the first, from 1910 to 1940, the farm population was nearly static, declining from 32 to 30.5 million, or by 5 percent. During the second, the decline has been rapid, with the total falling to less than 20 million, or by well over one third. Because of the expansion in the rest of the economy, the relative decline has been even more marked, as Table 25-1 makes clear. As a result of these developments there are today very few countries in the world where agriculture is *less* important than in the United States.

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[1] The matter is discussed at some length in Chapter 27.

TABLE 25-1

The Declining Importance of Agriculture

| Period | Percentage of Total Accounted for by Farm Population | Farm Labor Force | Farm Income |
|---|---|---|---|
| 1910 | 35 | 31 | 16 |
| 1920 | 30 | 27 | 14 |
| 1930 | 25 | 21 | 8 |
| 1940 | 23 | 18 | 8 |
| 1950 | 17 | 12 | 7 |
| 1955 | 14 | 10 | 5 |
| 1960 | 11 | 8 | 4 |

SOURCE: Farm population from U. S. Bureau of the Census and Bureau of Agricultural Economics (Series Census—BAE, No. 16, March 1953) and U. S. Bureau of the Census and Agricultural Marketing Service (Series Census—AMS, No. 21, Aug. 1955) with the 1960 figure estimated by the author; farm labor force through 1940 from Theodore W. Schultz, *The Economic Organization of Agriculture* (New York: McGraw-Hill Book Company, 1953), p. 123 and thereafter from the estimates of the Bureau of Labor Statistics; farm income through 1950 from Ronald L. Michell, *American Agriculture* (New York: John Wiley & Sons, 1955), p. 10 and thereafter from the income estimates of the Department of Commerce.

### Reasons for the Decline

Why has agriculture declined so drastically? The basic answer is simple: in the last 170 years our ability to produce goods and services, including agricultural products, has increased immensely, but we have not wanted to increase our consumption of farm products comparably. Hence the relative importance of agriculture has declined sharply.

More precisely, a man's need for calories is practically fixed. If he has less than the maintenance amount, he starves; if more, he gains weight. Thus, as far as an individual goes, the main way that he can increase his demand for agricultural products—without ruining his health—is to consume more expensive calories. The possible range is great: calories in steak are at least ten times as costly as calories in bread. Increased consumption as a result of upgrading is certainly still possible: it has been estimated that "if all families in the United States with incomes of less than $3,000 were given the food-buying power of the group with incomes of $3,000 to $4,000, the consumption of dairy products in this country would be raised by 12 per cent and that of meat, poultry, fish, and eggs, 7 per cent, whereas that of flour and cereals would be decreased 19 per cent."[2] Clearly expenditures on agricultural products can increase, but they tend in fact to increase quite slowly. In other words, the demand for agricultural products is income-inelastic—especially if income is measured per person. It is also in general price-inelastic, for the quantity purchased is likely to be little affected by price changes.[3]

In addition to buying more expensive calories, an individual can increase his expenditures for food by buying food that has been more highly processed—currently described as food with "built-in maid service." Viewed the other way round, it is often charged by farmers that they receive too small a share of the retail value of food—a result they often attribute to the lack of bargaining power of their highly competitive industry. Since 1790, as noted, undoubtedly much that was done on the farm is now done by other industries; but, somewhat surprisingly, since 1910 there has been considerable constancy in the percentage of the retail food dollar received by farmers until quite recently. That percentage averaged 45 percent in 1913–1915, rose to 51 during World War I, fell to 32 at the bottom of the Great Depression, rose to 53 during World War II, but in 1952–1954 was again 45 percent.[4] What appears to have happened is that some increase in processing was probably taking place, but was concealed by a relatively more rapid increase over the last fifty years in productivity of processing industries as compared with agriculture. Recently there has been a significant decline in the percentage to 40 percent in 1956–1958, both because productivity has been increasing more rapidly in agriculture than elsewhere since World War II and because the growing popularity of the deep-freeze and the television dinner have brought about a sharp increase in processing.

## The Basic Farm Problem

Relative shifts in demand are a normal part of a free enterprise economy, but adjustment has always been particularly difficult in agriculture, partly because a geographic as well as an occupational shift is almost always involved, partly because it is hard for a farmer to accept the fact that his investment in his farm has become substantially worthless, and partly because farming has, to some extent, always been "a way of life." As a result, with the possible exception of a few war years, we have had, and still have, more agricultural producers than we need to meet the demands of consumers for agricultural products. It is, in short, the difficulty of adjusting supply to demand that is the essence of the "farm problem."

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[2] John D. Black, *Quarterly Journal of Economics,* August, 1958, p. 322.

[3] These concepts were defined in Chapter 10.

[4] W. E. Hamilton, Special Report No. 55 (Washington: National Planning Association, November, 1959), p. 10.

In a dynamic economy "adjustment" is not easy to define precisely nor likely to be achieved completely. But both the low level of farm incomes and the continuing reduction of the farm population are clear evidence that "adjustment" in the sense of an equilibrium likely to continue between the rural and nonrural labor force and between the rural and nonrural level of incomes does not yet exist. Differences in relative incomes are, of course, the basic device by which a free enterprise economy moves resources from less useful to more useful alternatives. One thing that has increased the difficulty of understanding the farm problem is that the need for adjustment has continued for so long that we have come to think of agriculture as in some sense inevitably relatively poorly paid. It need not be. In the United States the income of the average farmer, on a comparable basis, is perhaps three quarters that of the average spending unit; but in Great Britain, where agricultural output has been deliberately *expanded* in recent years, the average British farmer receives *twice* as much as the average spending unit.

There is no reason why the percentage of the labor force in agriculture and the percentage of the national income accruing to agriculture should be the same, especially as comparisons of farm and nonfarm income are not easy. But the ratio between them appears to be a valid measure of the prevailing *pressure* for adjustment. Thus in 1920, before the post–World War I depression in agriculture, 27 percent of the labor force received 14 percent of income, a ratio quite similar to that which prevailed in 1910. But during the twenties pressure greatly increased, until, in 1930, 21 percent of the labor force received only 8 percent of income; it was at this point that serious efforts to aid agriculture started. Partly as a result of these efforts, partly as a result of World War II and its aftermath, and partly as a result of the sharp decrease in the labor force, pressure measured in this way had been somewhat reduced by 1950. But since then, despite a continuing reduction in the labor force and continuing aid, pressure for adjustment appears again to have risen.

### Programs to Aid Agriculture

Programs designed to aid agriculture have been numerous, complicated, and constantly changing in detail, but they all rely on the fact that the demand for agricultural products appears to be inelastic. This means that, if supply is decreased by 10 percent, price will increase by more than 10 percent, enlarging total expenditures on the product and, as a result, the incomes of those who produce it. Figure 25-1 illustrates what is involved. Suppose *DD* is an inelastic demand curve and *SS* the supply curve for an agricultural product. In the absence of efforts to raise prices, the curves will intersect at point $x$, the price will be $op$ ($= ax$) and the quantity sold $oa$ ($= px$). But suppose the government wishes a higher price, $op'$ ($= a'x'$), to prevail. There are two ways it may achieve this. It may simply buy up and remove from regular market channels a quantity of the product equal to $a'a$. Then the amount available to the regular market will be $oa'$ and the price the desired $op'$. Alternatively, the government may in some way or other bring about a decrease in supply so that the *SS* curve rises to *S′S′*; the point of intersection will then be $x'$ and the price once again the desired $op'$.

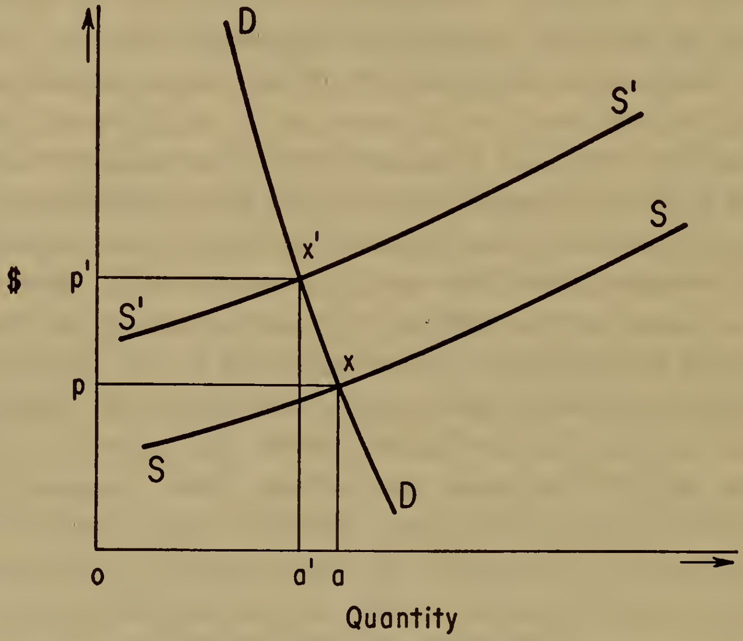

Fig. 25-1. Raising agricultural prices.

Let us use Figure 25-1 to review the meaning of "surplus" (originally defined in Chapter 11). Given the *SS* curve, there is no "surplus" at price $op$; but there is a "surplus," amounting to $a'a$, at price $op'$. When we say there is a "surplus" of wheat, therefore, it does not mean that more wheat has been produced than can be used; it merely means that more wheat has been produced than people are willing to buy *at a price higher than would prevail in a free market.* Note an important difference between the two alternatives just outlined for raising prices; if the supply curve can be raised to *S′S′*, there is no "surplus" at the desired price *op′*; but with the *SS* curve, *a′a* is "surplus" at price *op′* and will have to be disposed of if price *op′* is to prevail.

### Surpluses versus Restrictions of Output

The simplest way for the government to aid those growing a farm product is to buy up and dispose of that amount of the output which is surplus in relation to the price the government wishes to have prevail. Various things may be done with the surplus: it may be destroyed; it may be given away in this country to those unlikely to buy the product—via, for example, school lunch programs or distributions to those on relief; or it may be given away or sold abroad. But destruction of surpluses has adverse political repercussions. And domestic disposal cannot be quantitatively large without decreasing domestic sales, so that both are of only limited help. Gifts abroad to needy underdeveloped areas might be made on a large scale but would be expensive. If, however, the expense is to be reduced by selling the surplus abroad, the price charged will almost certainly have to be less than cost. This is nothing more nor less than "dumping." It is something we very much resent; we can hardly expect other nations not to resent it, especially when their export markets are typically far more important to them than ours are to us. In short, although buying up a surplus is an easy way of providing aid, getting rid of it—at least in ways that are politically acceptable—is not easy.

An obvious solution is not to let the surplus come into being. This is much more acceptable politically. People were deeply offended at the plowing under of crops and the slaughter of little pigs that marked the start of agricultural aid in 1933; they appear to have no such emotional reaction if the acres that could have grown the crops are kept idle or the sows are not allowed to breed. Further, if farmers are induced to restrict their output—to raise their supply curve to *S′S′* in the diagram above—by government payments, they are aided *both* by the resulting rise in prices *and* by the payments. (Even more acceptable is to say that the unplanted land is not being held idle but is being put into a "soil bank" to improve its fertility!) Ideally it is actual output that should be restricted. But this, unfortunately, depends, among other things, on the weather, which is notoriously unpredictable. As a result, it is acreage rather than output that is typically controlled. Surpluses are not necessarily completely eliminated, especially during a period when productivity is increasing rapidly, but restrictions are likely to reduce their size substantially.

## The Impact of Parity

The ratio of the prices of things farmers buy divided by the prices of things they sell that prevailed just before World War I is called "parity." That date was picked because the ratio was higher then than it has ever been before or since except during wartime. Whether or not the government should aid agriculture, parity—either in the meaning just given, or with certain recently suggested modifications—makes no economic sense, but it has been immensely important politically. One school, anxious to provide farmers with a maximum of aid, has argued for "rigid" and unchanging support of the prices of basic crops at some percentage of parity—in recent years, usually 90 percent. Others, fearful of the resulting surpluses, argue for "flexible" support, varying with the size of the surplus and other economic developments.

Parity has been particularly harmful when applied to crops where the economic environment has changed significantly. One such is butter, so hard hit by the increased availability of margarine that it has had to accept a price well below parity or see itself priced out of the market. Much more spectacular is the case of cotton. Historically America was the world's most important exporter of cotton. Today we cannot sell any cotton abroad at our domestic price, and cotton production has expanded so much in other areas that the world may soon have no need whatever for American cotton. Offhand one might assume that this was the result of the inefficiency of American cotton growers. Actually they are probably the most efficient in the world, having raised average yields per acre almost *threefold in thirty years!* To keep from being swamped by surpluses, we have cut the acreage on which cotton is permitted to be grown by *around 60 percent* during the same period, but must still find export markets for a third of our crop—partly because the high domestic price has encouraged the use of synthetics. Sales abroad, however, can only be achieved by "dumping" the cotton at less than it cost the government; this in turn means that foreign producers often ship textiles to the United States made of American cotton that costs them less than cotton bought here by our own producers! Not many would argue that the government ought, by buying the surplus, to re-establish the pre-World War I ratio between the price of buggies and automobiles. It is not clear that, in view of the rapid changes that have taken place, our policy toward cotton makes much more economic sense.

### Aid Programs and the Organization of Agriculture

Suppose we turn from this relatively extreme example and attempt an overall appraisal of our agricultural aid programs. By what standards is the appraisal to be made? One possible objective might have been to facilitate the adjustment of supply to demand and thereby contribute to the solution of the "farm problem" as we have defined it. With trivial exceptions, neither by design nor in operation have our aid programs contributed to the solution of our basic difficulties. In fact, it can be argued that, by reducing income differentials, they have actually made the ultimate solution harder than ever.

On the other hand, it can be argued that the purpose of the aid programs was not to solve the "farm problem" but to provide relief for needy farmers. To understand why past programs have contributed little to the relief of agricultural distress we must know more about the organization of American agriculture. In 1954 there were 4.8 million farms in the United States with average gross sales of $5,150 and average income derived from farming of $2,800. Undoubtedly the thought of an "average" farmer with an income substantially less than that of the "average" urban worker goes far to explain the acceptance of agricultural aid programs. Rarely has an average been more misleading. Perhaps the single most important fact about American agriculture is that in 1954 *27 percent of all farms produced close to 80 percent of all farm output sold.*

This result follows, first, because 1.5 million, or 30 percent, of all farms were classified as *noncommercial.* Some 900,000 of these were classed as *residential* because their gross sales of farm products were less than $250, but "hillbilly" subsistence farms may in some cases have sales so small as to fall in this category. The remaining 600,000 noncommercial farms were classed as *part-time,* either because the operator worked 100 days away from the farm or received more than half his income from other sources. Both types of noncommercial farms were together responsible for not more than 2 percent of the farm output sold in 1954. But even among commercial operators, who receive most of their income from farming, there are vast variations in the scale of production. The two smallest classes distinguished by the census, with average gross sales of $700 and $1,800, included 1.2 million farms in 1954 but were responsible, respectively, for only 1 and 6 percent of sales. In other words, 2.7 million of the 4.8 million farms in 1954 accounted for 9 percent of farm output sold. At the other extreme, the largest two classes of farms, including 12 percent of all farm units, were responsible for 58 percent of all agricultural sales. In fact, at the very extreme the largest 3 percent of all farms produced 31 percent of total sales—which is more than was sold by the smallest 80 percent of all farms.

### The Income Transferred by Current Programs

The cost of agricultural aid programs at the present time is about $6 billion. Of this it has been estimated that somewhat more than $4 billion is directly received by farmers.[5] To this must be added the additional transfer that results from the higher prices farmers receive when supply is reduced in the face of an inelastic demand. On the other hand, farmers themselves pay for part of the program both in higher taxes and in the higher prices they themselves pay for farm products at retail. No precise estimate is possible, but, of the $17 billion of income received by farmers in 1960, hardly less than a third can be attributed to the overall operation of current agricultural aid programs—say, a total of $6 billion.

Partly for administrative and partly for political reasons, the aid programs have concentrated on the "basic" commercial crops grown typically on larger farms—wheat, cotton, corn, rice, peanuts, and tobacco. It is therefore conservative to assume that aid programs have raised all farm incomes proportionately. But even on this assumption, if we distribute the $6 billion of estimated aid among the farms in existence in 1954, perhaps $3.5 billion of the income transferred by government action were received by the 600,000 farmers in the top two census classes, whose gross sales in 1954 averaged $25,000. In fact, the 134,000 largest farms received close to $1.9 billion, or an average of something like $14,000 each. At the other extreme, the 763,000 farmers with gross sales of between $1,200 and $2,500 received perhaps $350 million, the 462,000 farmers with sales under $1,200 received less than $100 million, and subsistence farmers practically nothing. It seems fair to conclude that present aid programs make no more than a minor contribution to the relief of agricultural distress.

### The Preservation of Family Farms

A third possible objective of aid programs is the preservation of "family farms," which are said to be the "backbone" of America. Numerically the "backbone" has already become remarkably slender. Clearly the farms in the largest census classification, with average family incomes of over $10,000 in 1954, are hardly "family farms" in the normal sense of the term. But recall that the two bottom census classes and all noncommercial farms produced only 9 percent of output; these also do not constitute family farms in the usual sense—or at least do not constitute satisfactory family farms. The units left, however, number less than 2 million—or about 3 percent of the labor force. Moreover, considerable consolidation appears desirable among the smaller units, for the 800,000 smallest farms of the 2 million produced in 1954 less than 12 percent of total output sold. It is therefore rather doubtful whether, if American agriculture were efficiently organized, the number of family farms would be much in excess of 2 percent of the labor force.

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[5] Estimate by John D. Black contained in Special Report No. 53 (Washington: National Planning Association, July, 1959), p. 9 note.

Perhaps the time has come to reconsider the significance of family farms. We are still inclined to think of farming as if a man could become a farmer by clearing a tract and building a house as was done in homesteading days. Actually, capital invested per worker in agriculture is today almost *twice* that invested per worker in manufacturing! Even in terms of reproducible capital—in other words, excluding the cost of land—it is significantly higher. Whenever there has been a movement toward large-scale production, the resulting demise of the small-scale entrepreneur has caused concern. The chain-store taxes in the thirties were an example. But would we really now prefer "pop and mom" retailing to the chain store and the supermarket? The matter may not be answerable entirely in economic terms, but, at least from the economic point of view, there seems no reason to preserve inefficient small-scale units in farming or elsewhere.

To summarize, we have suggested that agricultural aid programs have made little or no contribution to the solution of the "farm problem" or the relief of agricultural distress, and have not done much to preserve family farms. Criticism is easy; remedies are more difficult. Before we attempt them let us look more closely at the wastes that are involved in the present organization of agriculture. Note that income transferred is not necessarily wasted; it is simply taken from consumers or taxpayers and given to farmers. What we want is an estimate of the labor currently attached to agriculture that is not needed to produce our present farm output.

## Wastes in Agriculture as Presently Organized

The following estimates are crude but appear sufficiently interesting to justify their presentation. The basic premise is that the 27 percent of farms that produce 79 percent of all output, plus half of the 17 percent that produce 12 percent of total output, are capable of producing our entire agricultural output in the absence of current output restrictions. Reallocation of some land from those displaced to those remaining is assumed, together with some increase in capital investment. In addition, some changes in the character of total output may be involved. But concentrating on labor and total output will provide us with a first approximation of the waste with which we are concerned.

What we want to do is to measure the labor devoted to farming that, on the above assumptions, is unnecessary. Starting with residential farms, it is not clear how many subsistence farms are included because they market less than $250 worth of crops. It is also not clear that all subsistence farmers would want to move, even if it were readily possible for them to do so. Thoreau preferred Walden Pond to Boston; perhaps Skunk Hollow, with untaxed corn liquor, is preferable to a Detroit assembly line. But it seems likely that at least 50,000 of the operators of "residential" farms would be willing to move to more productive alternatives if the change could readily be made. Next come part-time farmers, who on the average receive less than a fifth of their income from farming. Many true "hobby" farms fall in this category; but it seems quite unlikely that the labor necessary to grow crops with an average market value of $620 in 1954 was predominantly of the "hobby" variety, especially as the labor must typically have been applied quite inefficiently. Rather, farming was almost certainly undertaken to supplement inadequate employment opportunities elsewhere; suppose we estimate that the labor of a quarter of the group, or roughly 150,000, is devoted to producing agricultural output and therefore, on our assumptions, wasted. Hence, overall, the labor of 200,000 on residential farms would seem to be unnecessary.

There are 1.2 million commercial farms in the two smallest census classes, but close to half their income is obtained off the farm. To allow for this, suppose we assume a net release of half those involved, or 600,000 workers. A total of 800,000 are included in the next census class. We assumed that only half of those in this class are needed in agriculture; but, again to allow for work off the farm, let us also assume a net release of only 300,000. On the basis of these estimates the labor of a total of 900,000 commercial farm operators appears to be wasted at the present time.

Finally, there are roughly 2 million agricultural laborers in the country, perhaps half of whom are migratory workers. Studies indicate that such workers in many cases work only a third of the time; it is most unlikely that they work as much as half the year. (Conditions under which migratory workers live are probably worse than those of any other group in the country. If anyone is entitled to government aid, such workers are. Yet little or nothing is being done to improve conditions, partly because migratory workers are rarely in a position to vote and therefore carry no political weight.) Clearly any release of such labor would require drastic reorganization of the way in which certain crops are grown. But the standard case for sharecropping and tenant farming has been that cotton had to be thinned and picked by hand; neither is any longer necessary. A release of not less than 20 percent of present agricultural workers, or perhaps 400,000, seems a minimum estimate of what could be accomplished in a short period of time without any serious repercussion on the *overall* supply of agricultural products.

To the extent that these estimates are correct, it appears that the labor of 200,000 on noncommercial farms, 900,000 on commercial farms, and 400,000 of our agricultural workers is not needed to produce our current agricultural output and is therefore wasted. In all, 1.5 million are involved, or 2 percent of our present labor force. The opposite side of these estimates is also interesting. They imply that our agricultural needs could be met by 1.7 million farm operators and 1.6 million farm laborers—a total of 3.3 million workers, or less than 5 percent of our labor force. Putting them together, it appears that perhaps 30 percent of the labor currently being performed in agriculture is wasted. From the nature of these estimates, it should be obvious that they are not in any sense precise. It should also be obvious that all the waste cannot be eliminated overnight; clearly changes are involved that will sometimes be slow and sometimes painful. But, whether or not correct in all details, the estimates suggest that, as presently organized, agriculture is one of the least efficient areas in the entire economy. Under the circumstances it seems fair to ask of any solution of the "farm problem" that it reduce significantly the current waste of labor in agriculture.

## Population, Conservation, and the Farm Problem

Will not the currently wasted labor in agriculture be needed in the near future as a result of population growth? In fact, cannot population growth be counted on to solve the "farm problem"? Ultimately there is no doubt that the decline in the agricultural labor force will be brought to a halt by population growth, with the exact date depending mainly on the rate at which productivity increases. But note that our present "surpluses" represent production in excess of consumption *despite the present pattern of acreage restrictions*. An estimate made in 1956, assuming the continuance of the restrictions imposed by present aid programs, came to the conclusion that almost 9 percent of production would be surplus in 1965 compared with 4 percent in 1955, so that a *further* acreage reduction of 7 percent—in addition to reductions now in force—would be required to achieve balance by 1965.[6] If the increase in productivity is rapid, it seems quite likely that agriculture will remain seriously maladjusted until 1975 or beyond even if present acreage restrictions are continued. But continuing rapid increases in productivity appear probable; if the best technology presently known were applied generally, it has been estimated that yields would be approximately doubled.[7] In fact, acreage restrictions, coupled with high support prices, in themselves offer strong incentives to introduce improved techniques. Fertilizer use, for example, has recently been increasing at close to 10 percent annually. In short, population growth will not solve the "farm problem" for several decades if the increase in productivity is rapid; and the increase is in fact likely to be rapid—in part because of the impact of the acreage restrictions imposed by present aid programs.

What about soil conservation? Have we "plundered our planet" so that immediate conservation measures are essential if we are to meet the future needs of our growing population? Never have our farms been in better shape; with no more land than was under cultivation in 1920, our production is 60 percent larger, so that there seems no reason to worry about the preservation of overall fertility. There is an erosion problem among subsistence and smaller commercial farms that cannot afford good farming practices; an entirely practical way of preserving the fertility of such soil is to stop farming it. On the large-scale commercial level, the western plains put to producing wheat during World War II are subject to erosion—the so-called Dust Bowl area. Consumption of wheat is declining while that of meat is increasing; hence it is desirable to return the area to grass for cattle. Although transitional help may be needed, for wheat farms do not easily convert to cattle production, it is the high support price under present aid programs that prevents adjustment and promotes dust storms. In short, apart from the elimination of unneeded farms, special conservation measures do not—in general and with minor exceptions—appear essential at the present time.

## Rural Development

How, then, is the "farm problem" to be solved? Two quite different programs are needed: one for those who should not be farming and one for those who should. A start of sorts has been made by the federal rural development program, but, because it lacks political appeal, it receives millions while price supports receive billions. It has thus far concentrated

[6] John D. Black and James T. Bonnen, Special Report No. 42 (Washington: National Planning Association, 1956).

[7] *Ibid.*, pp. 11–12.

on improving the agricultural techniques of those who want to remain in farming and, drawing heavily on local help, on providing alternative opportunities for those who wish to withdraw from farming. One has only to recall the basis of the estimate of 1.5 million unneeded farmers to be aware of the difficulties that will have to be overcome if more productive employment is to be provided. But, although variety will be essential and difficulties inevitable, it seems reasonably certain that major results could be achieved if even a small part of the money and effort going to present aid programs were put into the rural development program.

Is this the sort of thing with which the government should concern itself at all? It is important to recall that perhaps the most remarkable single aspect of our agricultural problem is the extent to which workers have withdrawn from agriculture in response to income incentives—in the traditional "American way." Continued reliance on individual initiative in response to income incentives is obviously essential. But at the very least for the government to concern itself with rural development seems a far more constructive activity than present aid programs. For present programs, as we have seen, accomplish little or nothing of lasting value, whereas transferring workers to more productive employment adds to our economic capacity at a time when the performance of our economy is of real importance. Few are likely to argue that we can afford the waste of human talent that is involved in the continued existence of hillbillies, sharecroppers, and migratory workers.

Some of the steps the government might take are more debatable than others. There is likely to be considerable agreement on the desirability of having some government agency provide information in regard to available job opportunities rather than have those seeking jobs learn of them by visiting individual employers. More controversial is the provision of vocational training, so that those displaced could more easily find employment elsewhere. Even more controversial would be actual government purchase of submarginal farms. Where the owner wished to move, the entire farm might be bought; where he wished to give up farming but still live on the farm, the right to farm the land might be rented for an appropriate period. Those on submarginal farms are, more frequently than usual, either young or old. The old might in many cases be helped by appropriate extensions of social security. Efforts to prevent the young from becoming trapped on unsuitable farms cannot fail to make a significant contribution to the long-term performance of our economy. Nor is it even certain—though perhaps probable—that the government would lose money on its purchases. Population growth and rising prices might permit the government to do well even if the holdings were sold as soon as free markets in agriculture had been re-established.

To summarize, if we wish to utilize the labor of the 2 percent of the labor force that is currently being wasted in farming, effective measures would not be hard to devise. Although controversial, they would not involve the government in doing anything beyond the sort of thing it is already doing in agriculture. They would, however, offer the possibility of achieving a permanent solution rather than something that is at best a temporary palliative.

## The Superiority of Production Payments

What about those who remain in farming? Without regard to the size of the aid to be provided, "production payments" are technically superior to support prices as a means of providing aid. Receipt of such payments can be made conditional upon the same acreage restrictions that are now required for the receipt of support prices. In a situation in which 10 million bushels can be sold at $1.50 a bushel and 9 million bushels at $2 a bushel, assume that the government wishes a $2 price to prevail and that, even with acreage restrictions, farmers will grow 10 million bushels. Then all the government has to do is to buy a million bushels at $2 a bushel and the remaining 9 million bushels will also sell at $2 a bushel. Overall what has happened is that farmers will have received $5 million more than they would have in the open market—$2 million from the government and $3 million from the general public (who paid $18 million for 9 million bushels rather than $15 million for 10 million bushels). But the government now has a million-bushel surplus to dispose of, which will probably be dumped abroad, antagonizing our friends and interfering with international trade.

Suppose, instead of buying at the $2 support price, the government undertook to make a "production payment" equal to the difference between the open market and the support price—in this case 50 cents a bushel. First, there would be no surplus and none of the problems that surpluses bring. Americans would, in fact, have 10 million rather than 9 million bushels to consume, permitting a general increase in domestic consumption. Second, the overall cost would be the same, or $5 million. Third, the burden would fall entirely on the government, which would be expected to raise the money by conscious tax policy rather than to allow $3 million of the burden to fall haphazardly on consumers, who in many cases are likely to be poorer than the farmers who benefit from the higher price.

### Income Payments

The economic superiority of production payments, therefore, seems clear. But if I were a farmer, I would oppose them strongly. Most consumers are not aware of the contribution they are making to farmers by the higher prices they pay over and above the payments made by government—and what people are unaware of they do not resent. Hence more aid seems probable under the present system than if the public became aware of the total subsidy now being provided. Moreover, especially if I had a larger farm, I would be fearful that production payments would lead to "income payments," in which the government undertook to supplement market receipts so as to ensure that farmers received "support incomes" rather than support prices. Technically there need be no difference between the two types of payments if the "support income" were to be the support price times a farmer's actual production. But the last thing I as a farmer would want the public to know is that, on the basis of 1954 production, probably close to 60 percent of aid was received by farmers whose average adjusted family income was $6,600. So long as an anonymous bushel of wheat receives a support price, it is always possible to think of the benefit as going to some worthy farmer whose income is far less than that of the average urban worker. Income payments would remove the anonymity.

### The Case for Continued Farm Aid

Suppose we accept the superiority of both production and income payments. Suppose also that the rural development program deals effectively with the problems of those leaving agriculture. Is there any case for providing, by production or income payments, general aid for those who remain? A strong case can be made for a *gradual* transition to free markets. Suppose we start with present support prices and acreage restrictions. The government might undertake to make production payments equal to the difference between support and market prices but declining by 20 percent each year over a five-year period. At the same time the government might allow an increase in acreage designed to end all acreage restrictions within five years. Although it is hard to argue that we are under much obligation to farmers for the food they produced during World War II, there is a case for providing for an orderly adjustment to free market conditions.

What about permanent general aid? A possible argument is that income payments should be used to stabilize the incomes of perhaps the bottom quarter of those likely to be permanently needed. We have suggested that perhaps half of the 800,000 farmers who marketed between $2,500 and $5,000 would be needed; the exact figure will depend on the rate of increase in productivity. An imaginative solution might be to guarantee some level of minimum income for those involved provided that they marketed a *rising* minimum of crops each year. If properly administered and accompanied by arrangements to make credit and other help available, this proposal might contribute significantly to turning some of our smaller farms into larger and more economically sound units. (Those failing to meet the minimum marketing requirement should, of course, receive help from the rural development program.) Whether or not this sort of program is desirable depends ultimately on the appropriate balance between reliance on government help and individual initiative. In this particular case it is worth stressing that, for once, the government and free enterprise would not be working at cross purposes. The basic purpose of the sort of government help proposed would be to expedite the changes that free enterprise might ultimately—but more slowly—be expected to bring about.

A final argument is that the risks of farming are too great to be borne by family-size farms. In theory, there is considerable merit to the idea of the government's undertaking to provide for seven lean years out of the harvest of seven plentiful years—or an "ever-normal" granary. The difficulty is that, in practice, the years when the government found it expedient to purchase crops would probably exceed greatly those in which sales were made. Hence any such program would almost inevitably lead to surpluses and the very problems we have considered in connection with present aid programs. With a five-year period of transition and vigorous efforts to bring supply and demand into balance by helping excess farmers to move to other occupations, it would not seem necessary to provide special safeguards against risk for those who would remain in agriculture.

### The Problem versus the Proposed Solutions

The particular judgments that have been expressed regarding the desirability of government aid are obviously debatable. But what is not debatable is that the present organization of agriculture involves a relatively large waste of labor and that present aid programs are of no help in eliminating the waste, alleviating the real distress of many of our poorer farmers, or adjusting supply to demand. Ultimately the growth of population may adjust supply to demand, although several decades may be required, especially if the increase in productivity is rapid. Meanwhile the elimination of wasted labor and the relief of distress, especially among migratory workers, remain urgent.

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# Economizing under Socialism and Communism

## The Historical Background

From a variety of proposals to remake society put forward in the nineteenth century, two broad movements have emerged: socialism and communism. Socialists have one important common characteristic: they believe in the possibility of reform within the framework of the democratic process. Communists, on the other hand, do not advocate revolution; as followers of Karl Marx they merely believe it to be inevitable because capitalists cannot be expected to give up their power without a struggle.

As late as the thirties the distinction between socialists and communists was often a fine one. Both were prepared to use force in defense of the legally constituted leftist Spanish government against Franco's rightist revolution; hence on one level the only issue between socialists and communists was whether the use of force by conservatives against a socialist regime was or was not inevitable. In recent years this difference has lost much of its meaning. On the one hand, the successful expansion of government ownership in Great Britain by parliamentary means has demonstrated the possibility of peaceful socialization. On the other, as the power of the Soviet Union has grown, the communist movement has come to be controlled by the adherents of Soviet Communism, and Soviet Communism has in turn become increasingly willing to use force, not in response to its use by reactionaries, but to expedite what communists believe will be the inevitable triumph of communism. Thus a communist has come increasingly to mean a person who is prepared to subject himself to the discipline of a party controlled by, and for the benefit of, the Soviet

Union. It is important to keep this change in mind when attempting to understand the wide acceptance of communism in the thirties. At that time a communist might have been no more than a person who felt that the violent reaction to reform represented by Franco was likely to be widespread. But if he clung on thereafter while the "party line" went through its numerous and violent shifts—believing that Finland attacked Russia in 1939, that World War II was an imperialist war until the day that Germany attacked Russia and a war against fascism thereafter, and that North Korea was the innocent victim of South Korean aggression—he would have become a "communist" in the present-day meaning of the term. When this is the meaning used in what follows, the term will be capitalized.

### The Meaning of Socialism

No similar definition of socialism is possible. Every deviation from strict laissez faire has at one time or other been called "socialistic"; in fact, any recent Republican party platform is replete with what can be described as "socialistic" proposals. Moreover, the character of socialism is itself changing. But, viewed broadly, most socialists are likely to agree on three proposals: that there should be "planned" production "for use and not for profit"; that there should be (some amount of) government ownership of the "means of production" (by which socialists mean capital and natural resources); and that there should be greater equality in the distribution of income.

To a significant extent, these three proposals reflect doubts regarding the validity of the three basic assumptions on which the case for free enterprise rests: that consumers know what is best for them; that there is competition in the economy; and that income should be distributed on the basis of a factor's contribution to production. Socialists point out that, if consumers are ignorant, it will often be profitable to manufacture products that are at best useless and at worst seriously harmful—hence the proposal that production be for use and not for profit. Again socialists, and especially Communists, regularly refer to *monopoly* capitalism; much of the case for government ownership is based on the belief that competition is in fact not likely to be effective. Moreover, while we have seen that the benefits from further redistribution of income in the United States are quite limited, socialism developed at a time when the top 5 percent of income recipients may have received over 45 percent of the national income in Great Britain and there was no income tax! Last—but for certain periods by no means least—is the fact that a free enterprise economy such as ours has had fluctuations in output and employment that, during the

Great Depression, wasted perhaps as much as 22 percent of our productive potential for an entire decade.

### Differing Economic Environments and Socialism

Let us examine these socialist criticisms in greater detail, with special reference to their implications for economizing. We shall find that, in most cases, differences are matters of degree rather than of kind, at least when comparison is made with the present American economy. This is the comparison that seems proper if our purpose is to assess the relevance of the socialist criticisms for our economy. But it is essential to keep in mind that, because free enterprise has worked well in the United States, it need not work well elsewhere. We tend to forget, because we take them for granted, that we have had an extensive system of publicly supported education, a reasonably impartial judiciary, a tradition of competition resulting from both the size and the impersonality of our immense market, and a tradition of actually paying taxes, which have been, on balance, in recent years definitely progressive.

Suppose, instead, we were dealing with a small and relatively closed economy, with a low level of literacy, a corrupt judiciary, a tradition of market sharing resulting both from intermarriage of the ruling families and the requirement of licenses before new businesses could be started, and tax revenues obtained mainly from duties on imported staples. Under such conditions free enterprise could hardly be expected to work very well. In fact, although free enterprise has produced in the United States the highest level of living the world has ever known, it has equally produced one of the world's lowest in Haiti—a nation that has been independent almost as long as the United States, so that colonial exploitation has not been involved. It is important to keep both these achievements in mind as we consider the socialist criticisms of free enterprise. If we are to understand the appeal of socialism and Communism for underdeveloped areas—or even why it is that large parts of the electorate of many Western European countries are avowed socialists—we must think in terms of the economic environment of the countries in question rather than that of the United States.

### Socialism and Democracy

In considering the socialist criticisms and in contrasting socialism and free enterprise, we shall assume that the political regime is in both cases democratic. There are those who believe that a socialist regime cannot be democratic. Their basic reason appears to be that, if the government owned all or most of the means of production, it would inevitably be so all-powerful and all-pervasive that casual changes of the party in power could not be tolerated; the real or fancied fear that a change might lead to a complete economic collapse would be used by the ruling regime to remain continuously in office. Those with such fears have on their side the fact that no fully socialized democratic regime exists. But most socialists believe strongly in democracy, and many steps in a socialist direction have been taken in countries with democratic traditions without weakening democracy; Great Britain, India, and Israel provide obvious examples. We are, moreover, interested in the essential *economic* differences between socialism and free enterprise. If we are to be able to analyze such differences, it is essential that noneconomic factors be as similar as possible. Hence, whether a democratic socialist regime is or is not probable, in order to be able to concentrate on economic differences, we shall proceed on the assumption that it is at least possible.

### Communism and Dictatorship

In communist doctrine socialism has a different meaning from the one thus far discussed. Communists consider socialism to be a transitional stage during which the victorious dictatorship of the proletariat liquidates the remnants of the bourgeoisie and prepares the way for the classless society of full communism, when the state, which in communist theory is the instrument by which one class suppresses another, will no longer have any function and will, therefore, "wither away." In communist thinking, the Soviet Union is "socialistic" in this sense. The difficulty is that class lines have, if anything, become increasingly marked in the Soviet Union and the state is showing no signs of withering away. Nor is there any clear evidence of any reduction in the degree of dictatorship within the Soviet Union. True, in the jockeying for power that followed Stalin's death, there was a point at which it was expedient for Khrushchev to attack Stalin's dictatorship and a period during which it seemed possible that the satellites would receive greater autonomy. But the difficulties of a partial dictatorship are immense. Recent events suggest that no significant reduction in the dictatorial quality of the Russian regime has in fact occurred.

Under the circumstances is it possible to examine the Russian economic system without reference to the prevailing political dictatorship? The problem is not merely that the Soviet regime is in fact a dictatorship or that there has been little tradition of democracy in Russia. The essential difficulty is that the whole economizing process under Communism reflects the imposition by the ruling minority of objectives, such as rapid industrialization and military strength, which would almost certainly not have been chosen had the regime been democratic. It is, moreover, not merely a few crucial decisions that are imposed, such as to devote a relatively small percentage of production to consumption, with consumers having free choice within the dictatorially determined percentage. Rather, Russian development has been so rapid that specific shortages have frequently made interferences with consumer sovereignty necessary even when the regime had no objection in principle to such sovereignty had there been time to eliminate the shortages. Specifically, the Soviet regime has often had to discourage consumers from buying metal products, not because it was averse on principle to consumers having goods made of metal, but because capacity was not currently available to produce both consumption goods and munitions. Note that a similar problem is faced by free enterprise economies during wartime—and a similar solution adopted. But are we under the circumstances to say that discouraging purchases of metal products is an essential characteristic of Communism or merely the result of a rate of development that has kept metal products in continuously short supply?

In short, efforts to get at the essential economic differences between Communism and free enterprise with "other things equal" are substantially meaningless; if it were not a dictatorship seeking rapid development and military power, the way the Soviet economy economizes might well be significantly different. In fact, to the extent that it is possible to attach any meaning to the question, it seems likely that economizing would be carried on, if other things were really equal, not very differently from the way it would be under socialism. Hence, in the discussion of the socialist criticisms that follows, we shall concentrate primarily on the differences between socialism and free enterprise.

### Production Objectives under Socialism

Let us first consider the socialist contention that production should be for use rather than for profit. When the proper role of government was discussed in Chapter 24, we considered the argument of the strict believer in laissez faire that production objectives established by consumer spending are "superior" on the ground that they are the only objectives that are clearly "voluntary." But we reached the admittedly controversial conclusion that there does not appear to be any rational basis for arguing that production objectives established by consumer spending are *inherently* "superior" to those determined by the will of a democratic majority. Most modern economies, in fact, give clear evidence by their actual behavior that an appropriate balance of public and private spending is what they seek to achieve.

It has been necessary to recall this discussion because socialism differs in principle from strict laissez faire, but only in degree from the actual behavior of modern economies. How can this be true? How can "planned" production be the same as production in response to consumer spending? The answer is that the word "plan" tells us little or nothing; the important point is what the plan seeks to achieve. In fact, a "plan" can be nothing more than an estimate of what is going to happen anyway as a result of consumer spending. But even where production is to some extent actually controlled by the plan, it is at least theoretically possible that, in the sphere of consumption, the plan will have as its sole purpose the satisfaction of consumer wants—in other words, the same goal as free enterprise.

Admittedly, as their name implies, socialists are in general likely to place more emphasis on production objectives determined by "social" action rather than on those determined by individual spending. Undoubtedly many socialists have thought in terms of a "planning authority" that would decide what was to be produced and would set production objectives on the basis of what it thought production *ought* to be. Clearly this approach has great appeal to those who dislike much of what is produced today and believe they know best what the public ought to have. Socialists are also inclined to stress the importance of consumer ignorance in an economy in which it is not always in the entrepreneur's interest for consumers to be well informed. And they are likely to place considerable reliance on production standards established by technically trained engineers in preference to those set by entrepreneurs whose primary interest is an immediate sale at a profit.

But the real question is not all or nothing. Rather, it is how much weight should be given to consumer preferences. Keep in mind that all modern free enterprise economies prohibit many types of consumption—such as narcotics—and impede the purchase of many others—such as alcoholic beverages, while many types of consumption—such as education—are stimulated by being made available free or at less than cost. On the other hand, no economy, whether socialist or Communist, is likely to plan production without paying at least *some* attention to what consumers want; even the most dogmatic socialist—at least in a democracy—is not going to be able to disregard consumer preferences completely. In the limiting case, it is at least theoretically possible for consumer sovereignty to be interfered with in a socialist economy in only the same ways, and to only the same extent, that it is interfered with in a typical modern free enterprise economy. Undoubtedly this would not satisfy those socialists who know exactly what we ought to want, but then there are many reformers who are not satisfied under free enterprise!

Note that Communists themselves pay at least lip service to consumer preferences. A leading Communist has stated: ". . . the very essence of Soviet trade calls for an all-round study of popular demand and the diverse requirements of the people." True, in the same speech he also said: "It is the function of Soviet trade to influence demand . . . It should cultivate the taste of the consumers, bring new goods into use . . . , promote the sale of . . . wholesome food products, and also of useful, well-made and beautiful manufactured goods. . . ."[1] But, if anyone feels that the second of these statements implies a lack of proper regard for consumer preferences, let him substitute "advertising" for "Soviet trade" and see if he can find anyone on Madison Avenue who objects to the amended statement!

To sum up, those who believe in placing most weight on consumer preferences as reflected in consumer spending will be for free enterprise with a minimum of interferences or for socialist planning that sets as its primary purpose catering to consumer spending; those who believe that most weight should be placed on decisions that are socially determined will place emphasis on interferences under free enterprise or independent planning under socialism. But, under either alternative, differences in the weight to be given consumer preferences in setting production objectives are matters of degree rather than of kind.

## The Minimum Implications of Government Ownership

Now let us turn to the second, and probably basic, socialist proposal —that government should own all capital and natural resources. This is, in fact, the typical textbook distinction between capitalism and socialism, but we shall once again find that it makes rather less difference than one might think.

To get at the minimum implications of government ownership, suppose we compare two economies that are identical in organization and purpose except for the ownership of capital and resources. To simplify, let us disregard resources and rent and consider a free enterprise economy with corporations that produce all output and sell it directly to consumers, who buy it with either the wages and salaries they receive for their labor or the dividends they receive as owners of the corporations. Consider in contrast an equally simplified socialist economy with state-owned trusts that produce all output and sell it directly to consumers, who buy it with the wages and salaries they receive for their labor. In the free enterprise case let us assume that saving is provided entirely by income recipients, who may lend out of either the wages or the dividends they receive. In the socialist case let us assume that saving is provided partly voluntarily by consumers and partly through taxation of consumers for this specific purpose. Finally, let us assume that the two economies interfere with consumer sovereignty to the same degree and by the same methods.

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[1] S. A. I. Mikoyan, report delivered at the All-Union Conference of Distributive Workers, October, 1953 (Moscow: Foreign Language Publishing House, 1954), pp. 20 and 39; quoted from A. R. Oxenfeldt, *Economic Systems in Action* (New York: Holt, Rinehart and Winston, Inc., 1957), p. 66.

### Profits and Competition under Socialism

Is there any reason why trusts under socialism should not have as their objective the making of a profit? Under free enterprise profits are a measure of economic performance, as they emerge when the cost of the scarce factors of production required to produce a given product is less than the public is willing to pay for the product. Provided that the public freely chooses the product and that the scarce factors freely choose to work at making the product—in other words, that competition prevails in the markets for both products and factors of production—a higher than normal profit is a reward for better than normal economizing. There does not seem to be any theoretical reason why the performance of trusts under socialism should not be similarly measured; in fact, there are clear reasons why it should be, for there is no better measure of *overall economizing performance.* Any simpler measure of performance—as, for example, producing the output provided for in the plan—runs the risk that the achievement will be at the expense of an extravagant use of scarce resources or will be made by neglecting the production of things consumers might much prefer.

Admittedly for most socialists "profit" is still a dirty word, implying exploitation of the masses by the classes. Only socialists with training in economics are likely to understand the significance of profits as a measure of economizing performance. But some socialists with such training have in fact proposed that socialism achieve efficient operation of its trusts by requiring them to maximize profits and subjecting them to the same cost constraints as those that apply to corporations. Cost constraints and profits can, however, be used to measure efficiency only if appropriate prices are attached to the factors of production. Government ownership would not prevent wages from being determined by competition between trusts; there does not appear any reason why labor should not be allowed to choose the trust it wants to work for on the basis of the wages the trust offers. In fact, the Soviet Union makes much use of wage differentials to move labor to where it is wanted, though the differentials are not necessarily set by competition between trusts. To the extent that competition is relied on, wages might have at least an approximate relationship to marginal revenue product.

Is it possible that under socialism trusts would be allowed to compete with one another? It is certainly not ruled out by the mere fact of government ownership. Admittedly, old-fashioned socialists thought of competition as wasteful and chaotic—as a force that drove down wages but never affected profits because of monopolistic influences—as, in short, nothing but the "law of the jungle" for which there would be no place in the well-ordered and well-planned society of the future! Communists, on the other hand, have long been aware of the advantages of competition—called "socialist competition" to distinguish it from the old-fashioned capitalist variety. The difference reflects the fact that, as idealists, socialists tend to hope that in the brave new world it will not be necessary to appeal to the competitive spirit to obtain from people the maximum of which they are capable, while, as realists, Communists are aware that both competition and material rewards are helpful in achieving maximum performance.

Thus, to summarize, the mere fact of government ownership does not appear to rule out trusts operated competitively with the objective of maximizing the profits they earn.

### Saving under Socialism

As we saw in Chapter 17, although personal saving is responsible for approximately 60 percent of total saving in the United States, the existence of corporate and government saving, the influence of changes in depreciation allowances, and the possible impact of government surpluses, all mean that income recipients do not by themselves determine our rate of saving. On the other hand, the Soviet Union recognizes the importance of voluntary saving and compensates it, though it supplements such saving to a major extent with funds obtained by taxation. Thus, in regard to the provision of saving, the difference between socialism and free enterprise would appear to be a matter of degree rather than kind.

But could the compensation of savers be the same? Does not the return received under free enterprise reflect profitability and therefore involve "exploitation" in the communist sense? Here (at long last) there is a basic difference. But, once again, it is not clear how much difference it makes in regard to the *supply* of voluntary saving. For there is substantial agreement among economists that the quantity of voluntary saving is not particularly sensitive to small variations in the rate of interest. Hence, even if the interest paid by a socialist economy were some arbitrarily determined "reasonable" rate, it is not clear that the *supply* of voluntary saving would be significantly different. It is, in fact, perfectly conceivable for a socialist economy to depend on voluntary saving to the same extent as a free enterprise economy does—even including depending entirely on such saving.

Compensation in connection with the *use* of saving is clearly a different matter. But suppose a socialist economy established a Capital Auctioning Authority, which gathered available voluntary saving by issuing bonds with "reasonable" interest to savers and allocated the sums raised, plus any funds the government wished to add out of general taxation, on the basis of competition among the trusts—in approximately the same way as we assumed they might compete for labor. Suppose, further, that, after paying a "reasonable" return to savers out of payments received from the trusts and providing a reserve against "losses" (in the sense of promised payments that trusts were unable to meet) and for its own cost of operations, the Authority gave any excess to the government. Such a system would appear both to provide for a rational allocation of saving and also to meet the basic socialist requirement that the government own—and receive the benefit from owning—the means of production.

Would managers of trusts estimate the profitability of the uses to which they could put additional saving with the same care as an entrepreneur? Where the entrepreneur is both the decision maker and the owner of a significant part of the enterprise, he is likely to do better. But where, as is increasingly true of American corporations, investment decisions are made by salaried executives, the difference between managers of corporations and managers of trusts may well be small. True, by stock options and profit sharing, efforts are being made to tie management's compensation more closely to corporate profits. But there is nothing in government ownership of capital that prevents making the compensation of managers depend on the performance of trusts. In fact, the Soviet Union has never shown any hesitancy in coupling compensation and performance; the difficulty has been that its measures of performance are crude. If a sophisticated measure such as profits were available, there is no theoretical reason why the compensation of trust managers should not be quite as closely related to profits as is true for most managers of American corporations.

### The Size of the Probable Excess

Is the excess—in other words, the difference between what it receives from the trusts and what it pays out to savers and sets aside to meet losses and costs of operation—that the Capital Auctioning Authority turns back to the government likely to be large? Let us assume that the government receives a separate interest return on the funds, raised by taxation, which it contributes to the Authority. In this case the excess is likely to be quite small *provided that competition is as vigorous as it is in the United States.* This point has already been made in connection with the discussion of the size of monopoly profits in Chapter 12, but it will bear repeating. We saw then that the aftertax return on corporate net worth—a rough measure of the corporate capital contributed by corporate owners—was about 6 percent in 1957. If an appropriate "interest" on "safe" investment is deducted, the overall compensation for risk bearing and management obviously cannot be large. In fact, there may well be many areas of the economy where the return is actually negative, as is the return from betting on horses. Specifically, if 4 percent is deducted as reasonable compensation for saving, it follows that 2 percent is what corporate owners receive for both management and risk taking. As both of these—but especially the cost of management—would have to be borne by the Capital Auctioning Authority, it seems clear that the excess it could turn over to the government would be quite small.

Undoubtedly the basic single difference between free enterprise and socialism is in the handling of compensation for management and risk taking. For in other respects it is possible for the two alternatives to operate, as we have seen, in a quite similar fashion. But socialists feel that, to eliminate "exploitation," the net benefit from ownership of capital and resources must be "socialized." This is not to suggest that, in any concrete case, the *only* difference is likely to be the way in which services—receiving, in the United States, perhaps 2 percent of the national income—are organized and rewarded. Other differences are practically certain to arise. But this does appear to be the *essential* difference between the two alternatives.

Which alternative is "better"? We may admit that investment by individuals seeking profits is not always perfect—and, from the social point of view, misallocation of saving by an individual who misjudges profit prospects is just as wasteful of scarce factors as misallocation by a bureaucrat even if the individual is wasting money which he himself has saved. But there is a clear presumption that an individual who stands to benefit personally and directly from the investment decisions he makes will make the best decisions he knows how to make. On the other hand, investment by our Capital Auctioning Authority might be relatively efficient, for it would be allocating available saving on the basis of profit prospects. The fact that the word "profit"—or some more acceptable variant—would be involved is *not* what is important; rather, it is the fact that the Authority would have some rational and objective basis for choosing among alternatives. For the basic danger of "investment by plan" is that it is likely to be at best arbitrary and at worst a hodgepodge response to a variety of political pressures.

### Government Ownership and Economic Balance

This point can perhaps best be seen by considering how the state-owned trusts are likely to operate. They are not likely to have any difficulty in pricing their products in such a way as to sell their output and recover their total cost of production. But is there likely to be any relationship between the cost and price of each product—to say nothing of a relationship between marginal cost and marginal revenue? Actually it is not even necessary for trusts to cover their costs; some may be operated at a profit and others at a loss, making the achievement of balanced use of scarce factors even less likely. This is, of course, the same problem that we previously considered in connection with government ownership of natural monopolies, but under socialism the problem is extended to the economy as a whole. Perhaps economists have exaggerated the harm involved; where both products are acceptable to the consumer, the welfare loss in having to consume somewhat more peas and somewhat less beans may be relatively small. But the possibility that planning may lead to quite chaotic use of our scarce productive factors is real.

It is, moreover, not clear that, in a dynamic world, state-owned trusts can be expected to move toward balance as rapidly as private firms. The flexibility of free enterprise seems obvious: let someone seeking a profit find there is a difference between what consumers are prepared to pay and the cost of producing bubble gum and bubble gum will be produced. Clearly a trust is unlikely to respond as rapidly, especially if "planning" means the establishment by a central authority of detailed production goals subject to only periodic revision. Many early socialists undoubtedly thought of planning as a quite rigid process, but they lived at a time when the "discretionary spending" of consumers was small, so that the rapid provision of bubble gum did not seem of the essence. Socialists were, moreover, impressed with the social cost of catering to the whims of consumers. If bubble gum seemed like a good thing, everyone and his brother were likely to try to produce it. Although the socialists wept no tears for the capitalists who lost their shirts when bubble gum was overproduced, they were bothered by the waste of capital and the insecurity of labor that rapid catering to consumer whims seemed to involve. As a result they undoubtedly had a preference for more orderly—more "planned"—changes.

### Socialists and a Capital Auctioning Authority

Are socialists likely to accept a Capital Auctioning Authority such as we have proposed? Probably only those who have received a training in economics will understand the implications of the proposal. One objection is that it makes capital appear to be "productive" and, therefore, undermines the argument that all returns to capital are the result of "exploitation"—a conclusion with such propagandistic value that it will not be lightly abandoned!

On the other hand, socialist economies might well benefit from the proposal. Capital, whether or not it is "productive," is scarce—and likely to remain so as long as we have developing economies with a preference for present over future benefits. Because it is scarce, it needs to be allocated carefully. The problem is more than a matter of terminology; we noted in Chapter 17 that the absence of an acknowledged rate of interest has been a continuing source of trials and tribulations for Soviet engineers trying to design railroads. There is little doubt, therefore, that a Capital Auctioning Authority, both by establishing a rate of interest and ensuring the efficient use of saving, would meet a real need of socialist economies. But all sorts of emotional objections are likely to intervene, so that it seems rather unlikely that socialists will agree to the Authority—at least not until a completely new terminology is invented—though it is just possible that, with appropriate educational effort, "socialist profit" as a basis for allocation might come to be accepted so long as it was clearly distinguished from the capitalist variety!

### Socialists and Distribution

What remains to be covered? So far as economizing goes, only distribution. Among the various aspects of economizing, none probably made more converts to socialism than the conviction that profits—largely as a result of monopolistic influences—were huge and would significantly raise the level of living of the masses if they were socialized. Despite the importance of this belief in promoting socialism, this section can be relatively brief, for we saw in Chapter 18 that the portion of profits spent on *consumption* amounted in 1960 to only 3 percent of total consumption. Nothing has been so disappointing to socialists as finding that, when industries in modern economies are socialized, profits are so small as to make practically no difference in regard to the wages that can be paid or the prices that have to be charged.

Would socialists favor further redistribution of income? The answer obviously depends on the extent to which material rewards are necessary to achieve socially desirable performance from able people. The socialist slogan in regard to distribution—"From each according to his abilities, to each according to his needs"—appears obviously utopian. For why, if his needs are going to be taken care of in any event, should anyone work to the best of his abilities? One possible answer is for nonmaterial rewards, such as titles and medals, or merely prestige and recognition. Socialists, as already noted, tend to be generally optimistic as to what can be done with nonmaterial rewards, whereas free enterprise economists and Communists tend to be more skeptical as to the effectiveness of such incentives. An outstanding economist once observed that free enterprise, in providing material rewards, appealed, not to man's highest motives, but to his strongest. In short, the issue is once more the *degree* to which inequality and the use of material incentives is felt to be necessary. There is no reason why—utilizing progressive taxation if the competitively determined distribution is felt to be undesirable—either system cannot achieve whatever distribution of income is felt to be appropriate in the light of the reliance on material rewards that is deemed to be needed.

### Socialism and Economizing—Summary

The stress on the possibility that two economies may be relatively similar even if one has private and the other government ownership of capital and land is unusual; most frequently the differences are emphasized. In practice, it is quite unlikely that the *only* difference between a socialist and a free enterprise economy would be that saving was allocated by a Capital Auctioning Authority rather than by individuals. There are many socialists who would object to setting production objectives by even *modified* consumer spending. Others would object to confining saving to the level that might be forthcoming under free enterprise even allowing for the influence of government debt retirement, or to utilizing even "socialist competition" to the extent that has been proposed. And even more are likely to object to having a Capital Auctioning Authority allocate saving on the basis of the profitability of the alternative uses to which the saving can be put.

The merit of the analysis that has been presented is that it should make clear that differences in any concrete case are likely to be not so much the result of government ownership as such, but rather the sum of a number of small differences in regard to a variety of aspects of economizing. Although the overall result may be profoundly different from an economy operating according to strict laissez faire, it is likely to differ only in degree from many present-day free enterprise economies.

### Socialism and Unemployment

This concludes our discussion of economizing under socialism and Communism—and is all the discussion that properly belongs in this section, which is devoted to economizing. But let us not leave the subject without calling attention to the relationship between socialism and economic development and unemployment (which will be considered in Sections III and IV). Let us start with unemployment.

The obvious inadequacy of the performance of free enterprise during the Great Depression made many converts for socialism and Communism during the thirties. It was, in fact, hard not to have major reservations about an economic system that was performing so badly. Strangely enough, during the thirties the level of living in Russia fell at almost exactly the same time as it fell in free enterprise economies. But the fall in Russia resulted mainly from the diversion of so much of an increasing total production to capital formation, under the First Five Year Plan, as to cause an actual reduction in consumption. In free enterprise economies, on the other hand, the decline was the result of the waste of our productive potential through unemployment.

Under socialism no *comparable* waste of productive resources is likely. The word "comparable" is stressed because economists have sometimes argued that socialism may involve a considerable amount of *concealed* unemployment in the sense that the managers of trusts may employ far more workers than are needed, so that, although the workers in question are nominally at work, their labor is actually quite as much wasted as if they were unemployed. This is hardly a unique problem of socialism; managers of American corporations have been known to employ more workers than they need, even when the additional workers are not relatives. Concealed unemployment in this sense, therefore, is a part of the continuing problem of efficiency in economizing; it is likely to exist continuously under both alternatives wherever management controls are lax. Admittedly, concealed unemployment under socialism may conceivably be larger than the total of concealed unemployment and deficiency unemployment under free enterprise—the latter (to be defined precisely in Section IV) being approximately the number who are unemployed as a result of economic fluctuations in a free enterprise economy. But the two sorts of unemployment nonetheless remain analytically distinct.

Why is deficiency unemployment unlikely in a socialist economy?

The answer is that deficiency unemployment occurs, in the main, as a result of cumulative fluctuations in profit prospects in economies where investment decisions are made by a great number of entrepreneurs acting independently. It is true that, the more use a socialist economy made of independent investment decisions by trusts on the basis of prospective profit, the more probable would be cumulative fluctuations of essentially the free enterprise sort. But even in the extreme case of minimum differences and a Capital Auctioning Authority, fluctuations would almost certainly be significantly smaller if only because of the greater ease of remedial measures. For we will find that the technique for achieving stabilization under free enterprise that is most fundamental is to have the government offset by its actions the fluctuations in the private sector of the economy. But under free enterprise this is definitely a case of the tail stabilizing the dog, as the private sector is far more important than the government sector. Any socialist economy faced with significant fluctuations would certainly keep sufficient control over its trusts to use them as stabilizing agents. As a result, fluctuations would be confined mainly to the consumer segment of the economy, and would therefore be likely to be neither cumulatively nor quantitatively important.

### Socialism and Economic Development

Economic development is presented last because, in my judgment, it is most important. In no other area is the distinction between socialism and Communism so sharp: it is quite conceivable that Communism will be described by future historians as a system with the primary virtue of promoting rapid economic development, and socialism as a system with the primary vice of retarding such development. The case for the first of these propositions is elaborated in Chapters 36 through 38, where the economic development of the Soviet Union is discussed in some detail. The main point there is that Russian development is the result, not of the Communist system as such, but of the kinds of decisions that a ruthless ruling dictatorship has made—predominantly in the direction of sacrificing present consumption for future industrial and military power.

The second proposition in regard to socialism is much more speculative; there is no fully socialist country to provide definite evidence in either direction. Three main reasons make it likely that development will be more rapid under free enterprise: strong incentives for change, impersonal results, and ease of saving. A profit system, appealing to man's desire for material gains, provides a strong and continuing incentive for entrepreneurs to find ways of improving the product and at the same time reducing its cost—which is the essence of development. Second, if in the process people get hurt—lose their jobs or their investment—no one is held responsible. Many may consider it a *virtue* of socialism that the manager of a trust *is* likely to be held responsible for those whose jobs he eliminates, but for this very reason he will almost certainly be less likely to eliminate jobs! Finally, the relatively unequal income distribution in the past and the facility with which corporations are able to retain income at the present time have made the provision of saving relatively easy. It is by no means clear that, if the rate of saving were decided by democratically elected planners, it would be as high as it tends to be under free enterprise.

None of these arguments is in any way definitive. It is quite easy to conceive of a socialist economy that would be organized so as to develop as rapidly as, or more rapidly than, the typical free enterprise economy. Some additional reasons for reservations in regard to regimes imbued with socialist principles are set forth in connection with the discussion of Great Britain in Chapter 35. Only the future will provide an answer as to whether or not such reservations are justified. But on the answer a great deal will depend, for no aspect of an economic system is more important, even over quite short periods of time, than the rate at which it develops.

# Section III | ECONOMIC DEVELOPMENT

# PART I Introduction

## 27

## Economic Development and Living Levels

### The Meaning of Economic Development

This section deals with economic development. With what, then, is it concerned? "Development," defined by the dictionary as "passage from a lower to a higher stage," is a term that implies improvement. We could, of course, have dodged the issue by entitling this section "Economic Change." Sooner or later, however, someone is going to want to know whether the change has been for better or worse, so that this would at best postpone the matter. The problem might as well be faced at the start.

Note that this section does not deal with development in general. Whether we have been moving toward a "better" state is quite beyond its scope. All we are concerned with is whether we are better off from an *economic* point of view. We have seen that no easy definition of "economic" is possible; the essence of the problem, however, is whether we are better off in *material terms*—in terms of the *goods and services* that are available to us. Even from an economic point of view this is not enough; we must also take into account the effort and sacrifice that go into obtaining such goods and services and the number of people involved in producing them. Clearly more goods obtained by more people working longer hours or under more adverse conditions would not involve improvement. But when *more goods and services became perma-*

*nently available to us for less effort and sacrifice per person,* then we may say that there has been economic development.

When economic development occurs, does it mean that we are necessarily better off in any general sense? Certainly not. In fact, for those who are convinced that it is easier for a camel to get through the eye of a needle than for a rich man to get to heaven, it seems to follow as a matter of simple logic that the more economic development we have, the farther we are from heaven! There is no doubt that our desires can increase quite as fast as—or for that matter a lot faster than—we can develop economically. It is perfectly possible, therefore, that the more material things we have, the more we shall want—and the more unhappy we shall become. Moreover, we may use our increased productive capacity to produce all sorts of things that—for noneconomic reasons—most of us would agree were completely undesirable. Does economic development, therefore, mean only more chrome, more neon lights, more singing commercials, with no assurance that anyone will actually be any happier? It *can* mean nothing more; *as economists,* we would say that such changes represented economic development. So long as we are able to produce more goods and services that satisfy our material desires with less effort and sacrifice, economic development has taken place, even if the result is to make us less happy than ever before. In short, economic development is like scientific knowledge: it may be used for good or for evil.

But it can be used for good: economic development can mean more leisure, better health, more time to read—even more time to contemplate the good life. In other words, economic development is at best but a means to an end, not an end in itself. But because economic development is a highly important means toward improvement of general well-being, it is worth extended consideration even if we can offer no guarantee whatsoever that improvement in general well-being will in fact result if in practice the opportunities made possible by economic development are misused.

## Effort and Sacrifice

In measuring economic development we shall be concerned mostly with measuring the quantity of goods and services that are available, disregarding, in the main, the effort and sacrifice side of the picture. This will be particularly true in Part IV, which deals with underdeveloped areas; but even in Part II, which deals with development under free enterprise, effort and sacrifice will receive little consideration. To this there is one important exception: wherever possible, especially in Chapter 28, which summarizes what has been achieved in developed free enterprise areas, we shall attempt to bring hours worked into the picture as the best available approximation of effort and sacrifice. We shall find that their inclusion is far more than a refinement: economic performance in terms of goods and services per man-hour often differs significantly from goods and services per person or per worker.

There are several reasons why effort and sacrifice will receive, in general, relatively little attention. One is that information regarding hours worked is not always available for the United States and only rarely available for other countries. But, in addition, the very fact that hours worked are only an approximation of effort and sacrifice itself raises complications hard to resolve. There can be no doubt that the intensity of effort per hour can vary over a wide range, and the sacrifice may also differ greatly with differences in the conditions under which the work takes place: intense labor at an uncongenial task under adverse conditions can involve vastly more effort and sacrifice than congenial work at a reasonable pace in pleasant surroundings. On the other hand, it is quite possible that the practical difference is exaggerated. One man's meat is the next man's poison: some find a routine job with complete freedom from responsibility after the whistle blows at five o'clock highly desirable, whereas others find routine work utterly boring. People, of course, tend to take the job that, other things equal, they find most congenial in the light of their tastes and interests. As a result, differences in effort and sacrifice among jobs are obviously far less than they would be if the jobs had been assigned at random to people with the same tastes and interests.

Even so there is no denying that many jobs have been in the past, and today remain, disagreeable—though for this very reason they are often well paid relative to the skills and abilities required. The real issue, however, is whether there has been any general change in the effort and sacrifice involved in work beyond that measured by changes in hours worked. Perhaps there was a period during industrialization when effort and sacrifice per hour worked increased; certainly the picture of the worker as no more than a cog in an assembly line set to operate at the fastest possible pace has troubled many observers. But the contrast with the past may well have been exaggerated, for the drudgery, hardship, and loneliness of agricultural work probably never made as good copy as the iniquities of the factory system. In any event, at least in developed economies, labor has become so expensive that management tries hard to eliminate routine tightening of nuts—and to make such routine work as is necessary as congenial as possible. Further, an important gain of unionization is the control it gives over working conditions—directly to unionized workers and indirectly to those in other areas.

In short, in my judgment it seems unlikely that the effort and sacrifice involved in an hour of work has, in the United States at least, increased. Thus it seems possible to measure effort and sacrifice, approximately, by changes in hours worked. This does not mean that this whole matter is not worth more attention than can be given it here. When comparisons between countries are made, for example, it is a matter that must inevitably be considered: to what extent do the far longer hours worked even in nationalized industry in Great Britain compared with the United States reflect a British preference for long hours at low intensity rather than short hours at high intensity? It would be desirable to know far more than we do about what is involved. In quantitative and historical terms, however, concentration on the output of goods and services appears permissible. Man probably has never worked consistently more than 80 hours a week and even today on a full-time basis rarely works less than 40; changes in the quantity of goods and services have been of far greater magnitude.

### Differences in National Income

The United Nations has published a comparison of average national income per person in fifty-five countries for the period 1952–1954. The sums involved were converted into dollars at prevailing rates of exchange —a method that, as we shall see, leaves much to be desired. Let us first look at the results and then consider their significance. Table 27-1 gives income per person in dollars, with the countries ranked in descending order of income per person.

The broad conclusion that emerges from the table is the well-known fact that at the present time there are substantial differences in living levels among countries. The countries with the highest third of incomes per person are predominantly either European or the British Dominions; the United States, Iceland, Venezuela, Israel, and Argentina are the exceptions. On the other hand, no European country is among those with the lowest third of incomes per person in the final column. The broad regional differences are summarized in Table 27-2, which presents income per person by continental divisions. But the differences within continents are also worthy of note: the European range is from $1,010 in Switzerland to $200 in Portugal, the South American from $540 in Venezuela to $120 in Peru, the African from $300 in the Union of South Africa to $50 in Uganda, and the Asian from $470 in Israel and $310 in Malaya to $50 in Burma.

### TABLE 27-1

### International Differences in Average National Income per Person for the Period 1952–1954

(In dollars)

| Country | Income per Person | Country | Income per Person | Country | Income per Person |
|---|---|---|---|---|---|
| United States | 1,870 | Puerto Rico | 430 | Dominican Republic | 160 |
| Canada | 1,310 | Ireland | 410 | Guatemala | 160 |
| Switzerland | 1,010 | Austria | 370 | Ecuador | 150 |
| New Zealand | 1,000 | Chile | 360 | Honduras | 150 |
| Australia | 950 | Cuba | 310 | Philippines | 150 |
| Sweden | 950 | Italy | 310 | Paraguay | 140 |
| Luxembourg | 890 | Malaya | 310 | Egypt | 120 |
| Belgium | 800 | Union of South Africa | 300 | Peru | 120 |
| Iceland | 780 | Lebanon | 260 | Ceylon | 110 |
| United Kingdom | 780 | Colombia | 250 | Rhodesia and Nyasaland | 100 |
| Denmark | 750 | Panama | 250 | Thailand | 80 |
| France | 740 | Brazil | 230 | Belgian Congo | 70 |
| Norway | 740 | Greece | 220 | Korea | 70 |
| Finland | 670 | Mexico | 220 | Pakistan | 70 |
| Venezuela | 540 | Turkey | 210 | India | 60 |
| West Germany | 510 | Portugal | 200 | Kenya | 60 |
| Netherlands | 500 | Japan | 190 | Burma | 50 |
| Israel | 470 | Jamaica | 180 | Uganda | 50 |
| Argentina | 460 | | | | |

SOURCE: Statistical Office of the United Nations, *Per Capita National Product of Fifty-five Countries: 1952–1954* (Statistical Papers Series E, No. 4, 1957), Table 1.

### TABLE 27-2

### Income per Person by Continental Divisions

| | |
|---|---|
| North America | 1,820 |
| Oceania | 960 |
| Europe | 580 |
| South America | 265 |
| Africa | 135 |
| Asia | 90 |
| World Average | 445 |

## Significance of the Estimates

How meaningful are these comparisons? In essence the broad ranking is probably significant, but the absolute differences are not. In other words, the table purports to show that an American is economically

37 times better off than a Burmese. To the extent that the comparison has any validity when the range is so great, the real difference is in all probability very much smaller. For this there are a number of reasons. The most obvious is the use of exchange rates in converting foreign currencies into dollars, for such rates, which reflect only the prices of goods that move, or are capable of moving, in international trade, give a rather poor indication of the relative purchasing power of currencies.

To illustrate what is involved in using exchange rates it will be necessary to digress for a moment to explore the general problem of comparing the production of, say, France and the United States. To make such a comparison, the goods and services produced in each country must be valued in a common set of prices. But should we use the prices prevailing in the United States or in France? Substantial differences are involved, as things that are plentiful are generally low in price. Thus if we use American prices to value the two sets of outputs, France does relatively well because the relatively high American price for wine is used to value the large French production of wine. But if we use French prices, then France does relatively poorly, because the relatively high French price for cars is used to value our large car production. This is nothing but a particular example of what is called the "index number problem" that is inevitably involved in making comparisons either between countries or within a country over time. No single correct answer is possible, but a range within which the correct answer falls can be established by using both sets of prices. This was done in a study of four European countries and the United States.[1] Table 27-3 gives estimates of 1950 gross national product per person in each of the European countries as a percentage of American gross national product per person on three bases: when the comparison is made in American prices, in the prices of the country concerned, and by using exchange rates.

In every case without exception the comparison based on exchange rates gives a lower result than that obtained by using *either* set of prices. This means that the results contained in Tables 27-1 and 27-2 have a systematic bias in the direction of exaggerating the differences between the United States and other countries. The reason for this is, as already suggested, that only the prices of those goods that move, or are capable of moving, in international trade influence exchange rates. In addition, the strong competitive position of the United States at the time these comparisons were made in regard to internationally traded goods and the efforts of other governments to encourage their exports and discour-

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[1] Milton Gilbert and Irving B. Kravis, *An International Comparison of National Products and the Purchasing Power of Currencies* (Paris: Organization for European Economic Co-operation, 1954).

### TABLE 27-3

### Gross National Product per Person in Four European Countries as a Percentage of Gross National Product in the United States on Various Bases

| | |
|---|---|
| United Kingdom | |
| Comparison in dollars | 63 |
| Comparison in pounds | 49 |
| Comparison by exchange rates | 37 |
| France | |
| Comparison in dollars | 53 |
| Comparison in francs | 39 |
| Comparison by exchange rates | 35 |
| West Germany | |
| Comparison in dollars | 43 |
| Comparison in marks | 30 |
| Comparison by exchange rates | 26 |
| Italy | |
| Comparison in dollars | 30 |
| Comparison in liras | 18 |
| Comparison by exchange rates | 16 |

age their imports in the face of American competitive strength undoubtedly led to the establishment of dollar exchange rates that did not fairly reflect the *internal* purchasing power of most currencies.

Estimates of the magnitudes involved are presented in Table 27-4. In it the actual income reported by the United Nations for the United States in 1952–1954—$1,870—has been multiplied by the percentages for

### TABLE 27-4

### Estimates of Relative Income per Person

(In dollars)

| | |
|---|---|
| United Kingdom | |
| Comparison in dollars | 1,178 |
| Comparison in pounds | 916 |
| Actual UN estimate | 780 |
| France | |
| Comparison in dollars | 991 |
| Comparison in francs | 729 |
| Actual UN estimate | 740 |
| West Germany | |
| Comparison in dollars | 804 |
| Comparison in marks | 561 |
| Actual UN estimate | 510 |
| Italy | |
| Comparison in dollars | 561 |
| Comparison in liras | 337 |
| Actual UN estimate | 310 |

both sets of prices as reported in Table 27-3 and the results are compared with the actual United Nations figure for the country concerned. First note that the United Nations figure is below the lowest otherwise derived in every case with the single exception of France. But, in addition, the wide range and general lack of consistency of the estimates—for countries with relatively adequate statistics—illustrate the sizable margins of error that are inevitably involved in comparisons of this sort.

### Comparisons between Developed and Underdeveloped Countries

The bias introduced by the use of exchange rates applies to all international comparisons, as do the various problems that were discussed in connection with the significance of national income estimates. Where countries are broadly similar in structure and degree of development, however, meaningful solutions are generally agreed to be technically possible. But when the attempt is made to compare the level of living of underdeveloped and developed countries, the magnitude of the problems that arise becomes so great that there are those who doubt if results of significance can be obtained. In underdeveloped countries the market sector is small and most production takes place in self-sufficient family units—just as it did on the American frontier a century or so ago. In such units, food is not only grown but also made ready for consumption. Under the circumstances, by what American price should the food grown on a Korean farm be valued: the price on the farm, at a processing plant, at wholesale, or at retail?

One is tempted to say at retail, since the Korean product is consumed and an American product's value nearest its point of consumption is its retail price. One difficulty with this solution is that information regarding retail prices is hard to obtain, in large part because products often differ at the retail level. Thus most rice in Korea is eaten "unpolished"—unshelled—which means that it contains all its vitamins, which are concentrated in the shell. We, however, like our rice "polished." For long, this meant that we lost most of the vitamins, but recently the polished rice has been "fortified" by the addition of the vitamins distilled out of the discarded shells. Should we multiply Korean rice production by the retail price of polished and fortified rice in the United States? Hardly. Presumably something valuable has been added by all the processing. But how much should we adjust the reported retail price?

Again, the retail prices of American products typically include advertising, transportation, wholesaling, and retailing. If a village cobbler in Korea makes and sells a pair of shoes identical in quality with a pair made in an American factory, should it be valued at the American retail price even if it is never advertised, transported, wholesaled, or—in the American sense—retailed? To the extent that these distribution costs are incurred merely to make factory production possible (presumably being more than offset by the economies of such production) and add nothing to the satisfaction the consumer derives from the shoes, this seems the proper procedure. But if we do use retail prices, we end up crediting Korea with doing many things that are in fact not done there at all! This point can be carried further. People apparently get born and buried on Korean farms without benefit of professional midwives or undertakers. Should the estimate of Korean production include an allowance for such services? Again, Korean families display a well-developed sense of family responsibility and can be counted on to take care of a man's widow and children. Should we therefore make an allowance for the "life insurance" they provide? How about barbering services? Or recreational facilities?

What do all these questions and qualifications add up to? China's income level is probably little above the lowest reported in the United Nations tabulation. But a careful comparison of American and Chinese income per person using more appropriate prices than the factory or wholesale price usually used led to the conclusion that American income per person was perhaps twelve times that of China—which would give a difference equal to perhaps a third of that suggested by the UN tabulation.[2] To the extent that it has any meaning when the countries compared are so different, the "real" range, although substantial, is clearly very much less than that reported by the tabulation.

### Comparisons in Physical Terms

In view of the complexities of comparisons of this sort, attempts have been made to throw light on the matter by comparisons of physical quantities. One approach has been to compare calories consumed per person. This is done in Table 27-5, which repeats some of the income estimates of Table 27-1, again ranking the countries in descending order of income per person. As is to be expected, the correlation between income and calories is not perfect. Agricultural countries, such as Argentina and Ireland, are not always able to trade their food for other products on reasonable terms and as a result may consume far more calories than their income position would appear to justify. But the general correlation between income and calories consumed nonetheless remains,

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[2] Ta-Chung Liu, *China's National Income, 1931–1936* (Washington: Brookings Institution, 1946).

TABLE 27-5

Comparisons of Income and Calories Consumed per Person

| Country | Income | Calories Consumed | Country | Income | Calories Consumed |
|---|---|---|---|---|---|
| United States | 1,870 | 3,088 | Austria | 370 | 2,726 |
| Canada | 1,310 | 3,114 | Chile | 360 | 2,344 |
| Switzerland | 1,010 | 3,109 | Cuba | 310 | 2,682 |
| New Zealand | 1,000 | 3,337 | Italy | 310 | 2,531 |
| Australia | 950 | 3,005 | Union of South Africa | 300 | 2,706 |
| Sweden | 950 | 2,996 | | | |
| Luxembourg | 890 | 2,944 | Brazil | 230 | 2,353 |
| Belgium | 800 | 2,944 | Greece | 220 | 2,498 |
| United Kingdom | 780 | 3,058 | Turkey | 210 | 2,647 |
| Denmark | 750 | 3,295 | Portugal | 200 | 2,385 |
| France | 740 | 2,846 | Japan | 190 | 2,160 |
| Norway | 740 | 3,118 | Philippines | 150 | 1,957 |
| Finland | 670 | 3,108 | Egypt | 120 | 2,319 |
| West Germany | 510 | 2,839 | Peru | 120 | 2,077 |
| Netherlands | 500 | 2,828 | Rhodesia and Nyasaland | 100 | 2,447 |
| Israel | 470 | 2,721 | | | |
| Argentina | 460 | 3,106 | Pakistan | 70 | 2,018 |
| Ireland | 410 | 3,498 | India | 60 | 1,683 |

SOURCE: Food and Agriculture Organization, *Yearbook of Food and Agricultural Statistics* (Rome: 1955), Table 81, p. 205.

and the overall range—from 1,683 to 3,498—is vastly less than for income. In fact, if allowance is made for the smaller average size of people in most Asian countries, the differences per pound of person would be very small indeed.

On the other hand, it is easy to conclude too much from this sort of comparison. Many of the Asian countries are at, or close to, a level below which survival is impossible, whereas an American who consistently consumes significantly more than the typical calory intake in the United States will both be overweight and have a relatively short life expectancy! In fact, in many cases we already pay extra to eliminate calories from the things we eat. Further, the bare calory figures are rather misleading. The difference between the average Indian's 1,700 calories and the average American's 3,100 may not seem large. But the average Indian's calories are obtained overwhelmingly from perhaps a pound a day of a staple cereal, whereas the average American consumes perhaps four pounds of food (or drink) a day, drawn from the various items that are summarized in Table 27-6. Clearly comparisons of calories consumed, taken alone, are not too helpful.

But if we turn from food to other physical measures, the results vary

TABLE 27-6

Major Components of the American Diet in 1958

(Approximate pounds per person per year)

| | | | |
|---|---|---|---|
| Dairy products | 460 | Potatoes | 107 |
| Fruits and vegetables | 330 | Sugar | 98 |
| Meats (incl. fats, oils, fish) | 209 | Poultry (incl. eggs) | 69 |
| Grains | 161 | Miscellaneous | 25 |

with the measure chosen. If we take a typical product of industrialization, such as the car or the telephone, the range can be immense: America is estimated to have 1,250 times as many cars and almost 1,000 times as many telephones per person as has China. Is there any way that telephones, cars, and calories can be combined into a meaningful total? Let us recall that what real national income attempts to measure is the total production of all goods and services, and that differences in the total production of goods and services are responsible for differences in living levels. Only to the extent, therefore, that physical measures of living levels can be selected and combined in such a way as to give a result representative of the total production of goods and services can they help in facilitating comparisons of living levels.

Can this be done? The most elaborate effort made thus far is a study by M. K. Bennett, who computed, with ingenuity and painstaking care, nineteen physical indicators of living levels for the period 1934–1938.[3] When each indicator is given the same weight, it appears that the range from the richest country (the United States) to the poorest (French West Africa) is somewhat more than 6 to 1. But when an effort was made to allow for the relative importance of the areas covered by the indicators, the range increased to more than 8 to 1.

### The Probable Range of Living Levels

Both Bennett's physical measures and the previously mentioned comparison of real income per person in the United States and China apply to the thirties and suggest a range of from 8 to 1 to 12 to 1. It is probable that the range has increased since then as the heavy unemployment of the Great Depression in the United States has been eliminated. Overall, therefore, it seems likely that, to the extent that comparisons are meaningful where the differences are so great, the range between the most and the least prosperous countries at the present time falls somewhere between 10 to 1 and 15 to 1—rather than the 37 to 1 range suggested by the tabulation of income per person made by the United Nations.

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[3] *American Economic Review*, September, 1951.

### A Summary of What Follows

The discussion of economic development that follows is divided into three parts. The first deals with areas where substantial development has taken place under free enterprise; in it main emphasis will be placed on Great Britain and the United States. Next we shall consider development under Communism, concentrating on the Soviet Union. Finally, we shall discuss some of the problems of underdeveloped areas, with special reference to the experience of India and China.

Problems involved in development differ in detail from country to country. No effort has been made in the discussion to cover all differences in all areas. Partly this has been done to ensure that the broad and basic principles in which we are primarily interested are not obscured by too much detail. But concentration on the countries just mentioned—which among them account for considerably more than half of the world's population—also reflects the judgment that the broad patterns of future world development will mainly reflect the experience of the five countries chosen. It follows that, although the broad principles are likely to be unchanged, the present discussion may have to be supplemented with additional specific information before it can necessarily be applied to any of the countries that have not been covered.

# PART II Developed Areas

## 28

## What Has Been Accomplished

### The Achievement of Eighty-five Years

In considering developed areas, let us start with a summary of what has been achieved over the eighty-five years for which reasonably detailed statistical information is available and then consider some of the factors that have been responsible for the differences in the speed with which development has taken place in these areas.

Tables 28-1 and 28-2 summarize eighty-five years of American economic development. They are complicated tables because they summarize a lot of material, but they will repay careful study. Throughout, all income estimates are expressed in terms of what the dollar would buy in 1960—not in terms of what it would buy when steaks were a quarter and the fixings were thrown in free. In other words, the income estimates measure, as far as it can be done, real income, or the actual quantity of goods and services produced in each period, for such goods and services are in each case valued in terms of the prices that prevailed in 1960.[1] Let us start with the overall picture and then examine the individual items more carefully.

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[1] Just as using dollar prices in Table 27-3 tended to "favor" other countries, so using 1960 prices tends to "favor" other periods. Hence the estimates tend, if anything, to understate the actual increase in production.

## TABLE 28-1

### Physical Measures of American Economic Development

| | Population[a] | | | Labor Force[b] | | | Hours Worked[c] | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Millions | Index | Percentage Change Per Decade | Millions | Index | Percentage Change per Decade | Number | Index | Percentage Change per Decade |
| 1875 | 46.2 | 100 | — | 15.2 | 100 | — | 64.7 | 100 | — |
| 1880 | 51.1 | 111 | — | 17.5 | 115 | — | 64.0 | 99 | — |
| 1890 | 63.9 | 138 | 25 | 22.9 | 151 | 31 | 61.9 | 96 | −3 |
| 1900 | 76.4 | 165 | 20 | 29.3 | 193 | 28 | 60.2 | 93 | −3 |
| 1910 | 92.7 | 201 | 21 | 38.1 | 251 | 30 | 55.1 | 85 | −8 |
| 1920 | 107.6 | 233 | 16 | 42.3 | 278 | 11 | 49.7 | 77 | −10 |
| 1930 | 123.4 | 267 | 15 | 48.9 | 322 | 16 | 45.9 | 71 | −8 |
| 1940 | 133.0 | 288 | 8 | 54.7 | 360 | 12 | 44.0 | 68 | −4 |
| 1945 | 140.8 | 305 | — | 61.4 | 404 | — | 44.5 | 69 | — |
| 1950 | 151.1 | 327 | 14 | 64.6 | 425 | 18 | 40.5 | 63 | −9 |
| 1955 | 165.3 | 358 | — | 68.9 | 453 | — | 40.5 | 63 | — |
| 1960 | 180.0 | 390 | 19 | 73.1 | 481 | 13 | 40.0 | 62 | −1 |

[a] SOURCE: Simon Kuznets, *Capital in the American Economy: Its Formation and Financing* (New York: National Bureau of Economic Research, 1961), Table R37. Five-year moving average centered on year involved through 1945. Thereafter for specific years from the Bureau of the Census.

[b] SOURCE: *Ibid.*, Table R39. Five-year moving average centered on year involved through 1945. Thereafter for specific years from the Bureau of Labor Statistics.

[c] SOURCE: J. Frederic Dewhurst and Associates, *America's Needs and Resources—A New Survey* (New York: Twentieth Century Fund, 1955), Appendix 20-4. The estimate for 1875 is an average of those for 1870 and 1880. Estimates for 1955 and 1960 are by the author, based on data from the Bureau of Labor Statistics.

In 1875 the United States was a country with 46 million people—roughly the present population of Great Britain—of whom 15 million were in the labor force. For their work in 1875 Americans received the equivalent of about $21 billion; income per person averaged $450 and income per worker roughly three times as much. To earn this amount they worked 65 hours a week—roughly six 11-hour days—and received for each hour they worked 42 cents. By 1960 population had increased almost fourfold, the labor force not far from fivefold, and income twentyfold. As a result, average income per worker was more than four times and average income per person more than five times as large as it had been in 1875. To earn this income the average worker put in perhaps 40 hours a week—say five 8-hour days—and received for his labor just under $3 an hour, which was almost *seven times* as much as his forefather had received in 1875. It would be hard to exaggerate the importance of changes capable of making an hour of man's labor seven times as valuable in a space of time that is not a great deal more than average life expectancy in the United States.

### Population, Labor Force, and Hours of Work

As most people know, the rate of increase of our population declined steadily from the Civil War to World War II. After the turn of the century the decline would have been even more noticeable had it not been for heavy immigration; it was, in fact, the cessation of immigration that explains in large measure the small increase during World War I. But the Great Depression of the thirties brought the population increase to its lowest ebb. Since then there has been a remarkable reversal to a rate of increase that is significantly higher than that before World War II. Actually between 1900 and 1950 our population almost exactly doubled. If the present rate of increase continues—as it gives every indication of doing—our population will have doubled again—to a total of 300 million—well before the end of the century.

Since 1875 in most periods the labor force has expanded more rapidly than population. In part this is misleading—as is the comparable increase in national income. For wives of farmers are not generally included in the labor force. But as farming has decreased in importance, wives in farm families that moved to urban areas often took paid employment and so were reported as a part of the labor force—though they may well have worked less hard than they would have if they had remained on the farm! Quite apart from this statistical addition to the labor force, however, there has been a steady increase in the extent to which women—both before and after marriage—undertake paid employment. The causes of the shift are many, but among them are the broad "emancipation" of women from restrictions that frowned on paid employment, and the greater leisure made possible by better appliances within the home and more processing of products before they are purchased. Although this trend is continuing, it has been obscured in the last two decades by the postwar rise in births and the resulting temporary increase in the number of those too young to be a part of the labor force.

Of the physical measures, hours worked is the one about which we have least direct evidence, but in the nature of the case it is doubtful if the estimates can be very far off. Broadly, two periods were marked by major decreases in hours worked: that from 1900 to 1920, when the 60-hour week was replaced by the 48-hour week; and that of the Great Depression, which set the pattern for a 40-hour week, though its full realization did not come until the prosperity that followed World War II. That there will be further decreases in hours is certain, but the speed with which they will come is harder to determine. Both the rise in the number of married women who work and especially the sharp recent rise in the number of men holding two more or less full-time jobs indicates that, in many cases and for a while at least, the desire for additional income is strong. It is this that explains why the decline in hours over the last decade was one of the smallest ever recorded.

## The Income Measures of Development

Although in the light of the limitations of the basic estimates it is hard to know how much weight to place on differences from decade to decade, the increase in income appears to have been far less steady than, say, the increase in population. The slowness of the increase during the thirties obviously reflects the Great Depression, and the rapid increase of the forties—the most rapid of the entire period—reflects the fact that 1940 was a year marked by considerable unemployment. These estimates do not allow for unemployment; as a result the increase in income slows down as unemployment develops and speeds up as it declines. If we look at the period 1930–1950 as a whole, income doubled. This is rather less of an increase than took place between 1890 and 1910, but rather more of an increase than occurred between 1910 and 1930. The factors responsible for these variations are by no means fully understood, but it seems fair to conclude that the Great Depression and World War II did not on balance lead to any significant retardation of the rate of increase in income—at least in comparison with rates of increase that have been achieved in the past.

## TABLE 28-2

### Income Measures of American Economic Development

(Dollar amounts in constant 1960 prices)

| | National Income [a] | | | National Income per Person [b] | | |
|---|---|---|---|---|---|---|
| Date | Billions of Dollars | Index | Percentage Change per Decade | Dollars | Index | Percentage Change per Decade |
| 1875 | 20.6 | 100 | — | 448 | 100 | — |
| 1880 | 31.0 | 150 | — | 604 | 135 | — |
| 1890 | 43.4 | 211 | 40 | 680 | 152 | 13 |
| 1900 | 64.6 | 314 | 49 | 843 | 188 | 24 |
| 1910 | 92.6 | 450 | 43 | 997 | 223 | 18 |
| 1920 | 117.6 | 571 | 27 | 1,093 | 244 | 10 |
| 1930 | 154.8 | 752 | 32 | 1,255 | 280 | 15 |
| 1940 | 192.0 | 932 | 24 | 1,443 | 322 | 15 |
| 1945 | 307.6 | 1,493 | — | 2,184 | 488 | — |
| 1950 | 309.6 | 1,503 | 61 | 2,049 | 457 | 42 |
| 1955 | 373.7 | 1,814 | — | 2,261 | 505 | — |
| 1960 | 417.1 | 2,025 | 35 | 2,317 | 517 | 13 |

| | National Income per Worker [b] | | | Hourly Income per Worker [c] | | |
|---|---|---|---|---|---|---|
| Date | Dollars | Index | Percentage Change per Decade | Dollars | Index | Percentage Change per Decade |
| 1875 | 1,359 | 100 | — | .42 | 100 | — |
| 1880 | 1,756 | 129 | — | .55 | 130 | — |
| 1890 | 1,899 | 140 | 8 | .61 | 145 | 12 |
| 1900 | 2,202 | 162 | 16 | .73 | 173 | 19 |
| 1910 | 2,403 | 179 | 9 | .88 | 209 | 21 |
| 1920 | 2,783 | 205 | 16 | 1.12 | 267 | 28 |
| 1930 | 3,166 | 233 | 14 | 1.38 | 327 | 23 |
| 1940 | 3,509 | 258 | 11 | 1.60 | 379 | 16 |
| 1945 | 5,010 | 369 | — | 2.25 | 533 | — |
| 1950 | 4,793 | 353 | 37 | 2.37 | 564 | 48 |
| 1955 | 5,424 | 399 | — | 2.68 | 638 | — |
| 1960 | 5,706 | 420 | 12 | 2.85 | 679 | 20 |

[a] SOURCE: Simon Kuznets, *Capital in the American Economy: Its Formation and Financing* (New York: National Bureau of Economic Research, 1961), Table R26. Through 1925 estimates are for net national product rather than national income and are a five-year moving average centered on year involved. No adjustment to national income has been made as Kuznets' NNP Variant III exceeded the Department of Commerce's estimates of national income by only 3.2 percent during 1929–1938. Thereafter estimates are from the Department of Commerce for specific years. Adjustment to 1960 prices throughout is by the price index implicit in the GNP of the Department of Commerce as reported in the 1954 National Income Supplement and subsequent supplements.

[b] SOURCE: *Ibid.*, Table R40, for estimates through 1925, adjusted to 1960 prices by the above procedure. Thereafter results are the estimates of income derived as explained above divided by the estimates of population and labor force contained in Table 28-1.

[c] National income per worker divided by weekly hours times 50.

It is by no means clear that the same has been true for the decade of the fifties. The increase in total income was 35 percent, which is faster than was achieved between 1910 and 1940. But the previous periods were marked by significant decreases in hours worked, which did not take place in the fifties. Overall there is probably no better measure of the performance of the economy than real income per man-hour—the measure presented in the last column of Table 28-2. The estimates assume, for want of information, fifty weeks of work a year over the entire period. Hence the increase is understated to the extent that vacations have become longer in recent years. One result that emerges is that the apparent retardation of the increase in income between 1910 and 1930 was not the consequence of a decline in the performance of the economy, but rather of a sharp decrease in effort as measured by decreased hours of work. Actually by this measure it appears that the performance of the economy steadily improved from 1880 to 1920, and the decline in the rate of improvement during the twenties would probably have been negligible if the terminal year had been 1929 before the effects of the Great Depression were felt in 1930. The impact of the unemployment of the Depression shows clearly; the estimates measure earnings per hour of the prevailing average full-time workweek—in other words, per "available" hour—rather than per hour actually worked. But note that the 16 percent increase achieved in the Depression is not greatly below that attained in previous decades.

The impact of unemployment in 1940 can be eliminated by comparing twenty-year periods. From 1900 to 1920 hourly income per worker increased 53 percent, and from 1910 to 1930 it increased 57 percent. But from 1930 to 1950 the rise was 71 percent. Some of the size of the increase may reflect the fact that the unemployment of the Great Depression had started in 1930. But it seems fair to conclude that, up to 1950, there is no evidence of any slowing down, or maturing of our economy as judged by the rate at which productivity increased. On the other hand, this means that as a "young" nation we did not progress particularly rapidly; in fact, the increase in hourly income per worker between 1880 and 1900 was the smallest of the entire period. To the extent, therefore, that it is fair to judge by historical parallels alone, the argument that the recent rapid progress of the Soviet Union can be explained by the fact that it is a "young" economy appears, at the very least, questionable.

Now let us look more closely at developments between 1950 and 1960. Suppose we separate the decade into two five-year periods, as is done in Table 28-3. It then appears that the increase between 1955 and 1960 in the national income as a whole was *less than 60 percent as rapid as that between 1950 and 1955*. The impact on income per person was even more striking. Further, hourly income per worker increased a little

TABLE 28-3

Recent American Income Measures

(Percentage change per five-year period)

| Period | National Income | National Income per Person | National Income per Worker | Hourly Income per Worker |
|---|---|---|---|---|
| 1950–1955 | 20.7 | 10.3 | 13.2 | 13.1 |
| 1955–1960 | 11.6 | 2.5 | 5.2 | 6.3 |

less than half as fast in the second half of the decade as in the first half. It is perhaps too soon to attach much weight to the change in performance, but it has been sharp enough to give cause for concern. This is a matter to which we shall return in Chapter 52, where the interrelations between inflation, deficiency unemployment, and the increase in productivity are explored.

### The Margin of Error of the Estimates

How accurate are these estimates? We have already considered some of the problems that are involved in the measurement of the national income. But the historical comparisons just presented raise special problems of their own. The farther back we go in time the less adequate is the basic statistical information that underlies all our estimates. The existence of a decennial census ensures that the margin of error in population figures is relatively small, but it is larger in the case of the labor force and even larger for the number of hours worked. The income estimates not only suffer from the difficulties of measuring income years ago; they are also subject to errors that arise in adjusting from past prices to those prevailing in 1960. With the exception of population and the labor force, all other estimates are probably subject to a *minimum* error of 10 percent; it is quite possible that subsequent work will find the error to be substantially larger. But the estimates are the best that are now available. Although later revisions may well alter specific magnitudes and precise timing, it is quite unlikely that they will change the broad pattern of development with which we are primarily concerned.

### British Achievements

How has the development of the United States compared with that of Great Britain? An outstanding difference is the slower growth of

British population, which increased by only 60 percent while American population almost quadrupled. It is obvious that an American businessman who overexpanded could expect to be bailed out by population increase in a way that his British opposite number could not possibly count on. Between 1910 and 1930 the total increase in British population was only a little over a million. Despite the increase since then, it is now anticipated that not more than an additional 3 million will be added to the population before the total starts to decline. In short, in looking ahead for the next fifty years, the British businessman can pretty well disregard population increase, while the American can expect the increase—if it continues—by itself to double the market for his goods.

Reflecting the slower rise of population, the increase in total British income was slower than in the United States, but the rise in income per person was also in general less rapid, especially after 1900. Two other differences stand out: the war decades hurt Britain far more than they did the United States, and the decade of the Great Depression was one in which Britain appears to have made *more* progress in terms of income per person than in any decade since the turn of the century. Though detailed information is not available, the decade of World War I in Britain, as in our own case, was marked by a considerable reduction in hours worked, so that the indicated decline in income per person was at least accompanied by a reduction in effort. This did not, however, occur to anything like the same extent during World War II; the burden of war on Britain has been real. Moreover, the apparent lightness of the impact of the Depression during the thirties, when British income per person increased rapidly, represented less of an improvement in the performance of the British economy than a cheapening of British imports relative to her exports. During the Depression, prices of raw materials declined more drastically than prices of manufactured goods. But this difference in price behavior was reversed as prosperity returned, so that much of the improvement in the thirties was of a temporary character.

Because the estimates for 1950 and 1960 are computed on a somewhat different basis, not too much reliance should be placed on the comparison between 1940 and 1950, but the gain, especially in income per person, during the war decade was clearly small. By 1960, on the other hand, income per person was close to three times what it had been in 1875. This compares with a more than fivefold increase over the same period in the United States.

The difference becomes even greater when allowance is made for the behavior of hours worked. It is likely that hours in Britain behaved in roughly the same manner as in the United States until the turn of the century. Thereafter, although World War I brought a sharp reduction of

## TABLE 28-4

### Measures of British Economic Development

(Pound amounts in constant 1960 prices)

| Date | Population | | | National Income | | | National Income per Person | | |
|---|---|---|---|---|---|---|---|---|---|
| | Millions | Index | Percentage Change per Decade | Billions | Index | Percentage Change per Decade | Pounds | Index | Percentage Change per Decade |
| 1875 | 32.7 | 100 | — | 4.5 | 100 | — | 135 | 100 | — |
| 1880 | 34.4 | 105 | — | 4.9 | 110 | — | 142 | 105 | — |
| 1890 | 37.4 | 114 | 9 | 6.7 | 150 | 36 | 179 | 132 | 25 |
| 1900 | 41.0 | 125 | 10 | 8.5 | 190 | 27 | 209 | 154 | 17 |
| 1910 | 44.6 | 136 | 9 | 9.9 | 220 | 16 | 223 | 164 | 7 |
| 1920 | 45.4 | 139 | 2 | 10.0 | 223 | 2 | 221 | 163 | −1 |
| 1930 | 45.8 | 140 | 1 | 11.5 | 257 | 15 | 251 | 185 | 13 |
| 1940 | 47.9 | 146 | 5 | 15.0 | 333 | 30 | 313 | 231 | 24 |
| 1950 | 50.4 | 154 | 5 | 16.0 | 356 | 7 | 317 | 235 | 1 |
| 1960 | 52.4 | 160 | 4 | 20.0 | 444 | 25 | 382 | 283 | 21 |

SOURCE: Through 1940 from James B. Jeffreys and Dorothy Walters, *National Income and Expenditure of the United Kingdom, 1870–1952* in *Income and Wealth, Series V*, edited by Simon Kuznets (London: Bowes & Bowes, 1955), Table III. The estimates are ten-year moving averages centered on the year in question. Adjustment to 1950 prices is by a price index weighted 94 percent by the index for consumer goods and services and 6 percent by the index for capital goods presented in Table XVI. Total income is derived by multiplying per capita income by population. Totals for 1950 and 1960 and the adjustment throughout from 1950 to 1960 prices utilizes estimates of the Central Statistical Office, some of which are preliminary.

hours, the Great Depression did not. In the mid-thirties hours worked in British manufacturing industry were close to 48 at a time when comparable hours in the United States were under 37, and in 1960 hours in manufacturing were still around 46. Allowing for the longer hours typically worked outside manufacturing, Table 28-5 presents some rough estimates of total hours worked and an index of hourly income per person. Note that hourly income per *person* is not the same thing as hourly income per *worker* presented in the last column of Table 28-2.

TABLE 28-5

Tentative Estimates of Hours Worked and Hourly Income in Great Britain

| | Hours Worked | | Hourly Income per Person |
|---|---|---|---|
| Date | Number | Index | Index |
| 1875 | 65 | 100 | 100 |
| 1900 | 60 | 92 | 167 |
| 1940 | 52 | 80 | 288 |
| 1950 | 50 | 77 | 309 |
| 1960 | 50 | 77 | 368 |

To the extent that the estimates of Table 28-5 are correct, they suggest that hourly income per person in Britain increased less than fourfold during a period in which hourly income per worker increased almost sevenfold in the United States.[2] Although further study may change the exact magnitude of this comparison, it is clear that there have been real and highly significant differences in the performance of economies even as closely allied by inheritance and language as those of Great Britain and the United States.

### Economic Development in Other Areas

Attention has been concentrated on Great Britain and the United States because the evidence available for these countries is considerably better than it is for other areas. But such concentration gives the impression of a quite superior performance by the United States. Recent studies have cast considerable doubt on the extent to which this is correct. Although—to repeat—the evidence that underlies these studies leaves much to be desired and although later revisions drastic enough to halve the present estimated rate of increase in individual cases are entirely possible, nonetheless it is important for perspective to examine some of the presently available material. Table 28-6 presents estimates of the percentage change per decade in population, real national product, and real national product per person. The period covered is from approximately the turn of the century to the latest date for which information is available. The countries are ranked in the order of the increase in national product per person.

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[2] Hourly income per person is income per person (whether or not in the labor force) divided by the number of hours worked annually (based on weekly hours times 50) by those in the labor force. It can be expected to move with hourly income per worker only where there is no change in the percentage of the population working. In the United States the *increase* in the percentage in the labor force caused hourly income per person to rise more rapidly than hourly income per worker. Hence the comparison in the text understates the relative performance of the American economy unless the percentage of those in the labor force in Great Britain *decreased* significantly over the period.

**TABLE 28-6**

**Relative Economic Development**

(Percentage change per decade)

| Country | Population | Real National Product | Real National Product per Person |
|---|---|---|---|
| Sweden | 7 | 38 | 29 |
| Union of South Africa | 21 | 50 | 24 |
| Norway | 8 | 34 | 23 |
| Japan | 13 | 38 | 22 |
| U.S.S.R. | 12 | 33 | 19 |
| Canada | 21 | 41 | 17 |
| Denmark | 12 | 31 | 17 |
| U.S.A. | 15 | 34 | 16 |
| Eire | −2 | 15 | 16 |
| Switzerland | 8 | 24 | 15 |
| Italy | 7 | 22 | 14 |
| New Zealand | 19 | 33 | 12 |
| United Kingdom | 6 | 17 | 11 |
| France | 1 | 11 | 10 |
| Australia | 17 | 28 | 10 |
| Netherlands | 14 | 25 | 9 |
| Hungary | 6 | 16 | 9 |
| West Germany | 10 | 20 | 8 |
| Spain | 9 | 15 | 6 |

SOURCE: Simon Kuznets, *Economic Development and Cultural Change,* October, 1956, Table 1, p. 10.

It is clear that on this evidence the United States has not developed most rapidly nor Great Britain least rapidly among the nations of the world. This conclusion, however, makes no allowance for the reduction in hours worked. If the reduction were taken into account, it appears that results would be significantly altered, as declines in hours worked show little correlation with the rate of increase in income.[3] Thus Great Britain, New Zealand, and Australia, which fall in the bottom half of the table, appear to have achieved relatively small decreases in hours worked and therefore to have turned in an even poorer economic performance than the table indicates. Italy, France, the Netherlands, and Germany appear to have attained relatively large decreases in hours and hence to have achieved a better economic performance than indicated. Again, Sweden and Norway, close to the top of the table, appear to have achieved relatively large decreases in hours—which suggests that their economic performance has been outstanding. One thing that does appear from the table is that there is no necessary relationship between rapid population growth and rapid increases in income per person: Sweden's population growth was less rapid than Spain's despite the fact that Sweden is at the top and Spain at the bottom of the list.

### Factors Responsible for Economic Development

If this table serves no other purpose, it should demonstrate the complexity of the problem of economic development. With this complexity very much in mind, we now turn to an exploration of some of the factors responsible for the differences we have observed. As before, because so much more information is available, we shall in this section concentrate on the United States and Great Britain—the former roughly at the bottom of the top third of developed countries in terms of the rate of increase in national product per person and the latter at the top of the bottom third.

In presenting the factors responsible for development, no formal theory of development is offered in the sense in which, for example, the Keynesian analysis, presented in Section IV, offers a theory of income determination. One obvious reason for not offering a formal theory is that none has been developed that commands any important measure of agreement among economists. But the disadvantages of formal theory are some times overlooked. Whenever a theory attempts to supply a complete explanation of complicated and by no means fully understood phenomena, it can do so only by establishing certain complex and inclusive relationships—the complexity of which is often not fully understood by the theorist himself. This is not to deny the usefulness of theoretical work. There can be no doubt that a theory of the factors responsible for the level of economic development would be very useful. But the absence of any general agreement among economists as to what the factors are, together with the real difficulties of formal theorizing in so complicated an area, explains why no formal presentation of a theory of development is attempted.

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[3] Information regarding hours worked is contained in Colin Clark, *The Conditions of Economic Progress* (London: Macmillan Co., Ltd., 1957), Chap. III.

Instead, we shall discuss some of the factors that appear important in explaining differences in the level of economic development. We shall start with a discussion of research in all its aspects, next consider the process of innovation by which the results of research are utilized, then turn to the role of saving in providing the capital that development requires, go on to explore the importance of resources in connection with development, and conclude with a chapter entitled "Some Other Factors." The order and extent of the treatment of the various factors reflect in a rough fashion my estimate of their relative importance. Undoubtedly the discussion throughout is in many ways incomplete. But the whole field of economic development is one to which modern economists have only recently given major attention. It hardly needs to be pointed out that as yet they do not by any means have all the answers.

## 29

# The Role of Fundamental Research

### Some Definitions

First, by changes in technology we shall mean changes either in end products or in the techniques by which they are produced. Second, by research we shall mean activities that make changes in technology possible. Broadly, research is of two sorts: that which adds to fundamental scientific knowledge and that which applies such knowledge to particular problems, resulting in at least an improvement or, if it is important enough, in an "invention." Finally, we shall mean by innovation the actual commercial introduction of an invention or other improvement that research has made possible. Clearly these are all aspects of matters so closely related that they cannot always be separated. Rarely does a new product or a new technique become available that is fully developed and ready for exploitation. In most cases it is from a sequence of interacting improvements and innovations that the final result emerges. Nonetheless it will be useful to distinguish scientist, inventor, and innovator as representing three main aspects of research and innovation.

How does an innovator in this sense differ from an entrepreneur—the person responsible for making business decisions? Does not innovation used in this way cover all entrepreneurial activity? The answer is that a distinction can be drawn between the inevitable choices that an entrepreneur has to make among *existing* techniques of production in order to minimize his costs and maximize his profits and *improvements* in such techniques. Admittedly the two are closely related, but the distinction is in line with most theorizing in economics, which in general assumes that there is a body of existing technology from which the entrepreneur selects the products and techniques he believes best for his needs *without in the process improving them.*[1] Hence when economics studies price and output determination it does so on the assumption that the entrepreneurs involved are not innovating.

The role of research and innovation in promoting development is not a matter on which economics has anything to offer remotely comparable to the body of doctrine that has been developed over the years as to how scarce factors of production are allocated among the alternative uses to which they may be put. But there is, in all probability, nothing more important in raising material well-being over even short periods of time than effective research and innovation. Hence a discussion of research and innovation cannot be avoided. The student should, however, be clearly warned—and therefore aware—that the discussion of these chapters is subject to an unusually wide margin of error.

### The Importance of Research and Innovation

Is it possible to determine the importance of research and innovation in the more than fourfold increase in real income per person that took place between 1875 and 1950? During that period the increase in capital per person can be estimated; it appears to have been roughly threefold. How much would the increase in capital have increased production if nothing else had changed? Even without precise measurement, it seems obvious that if present production were confined to the products and technologies known in 1875, it would be very much lower. All that we would be working with would be more elaborate and carefully made capital equipment of the sort that existed in 1875, and all we would be producing would be products known in that year.

Any effort at more precise measurement involves an estimate of the relative importance of the contribution of capital and labor to total production. One way in which this can be done is to take the share of the national income received by capital and by labor as measuring their relative importance. This does not by itself solve the problem. Although the shares of total income going to capital and labor have not changed greatly, the fact that capital has increased three times as fast as labor means that the reward per unit of capital has declined significantly compared with the reward per unit of labor. We get, therefore, rather different results if we measure the importance of the increase in capital on the basis of the relatively high return per unit it was receiving at the start of the period or on the basis of the relatively low return per unit it was receiving toward the end of the period. This is another example of the "index number problem" discussed in Chapter 27. Neither procedure is intrinsically "right," but the truth undoubtedly lies between them.

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[1] The assumption of unchanged technology has to be made if unique cost curves are to be obtained. For if an entrepreneur were to improve on available techniques as he utilized them, his costs would not be predictable and it would be impossible to discuss reversible movements along a cost curve. But, as Appendix B (Chapter 16) made clear, unchanged technology does not rule out changes in methods of production, in response to changes in the level of output, provided that the methods were *known beforehand.* In short, the entrepreneur chooses among known methods without improving them, whereas the innovator introduces improved techniques of production.

Estimates on both bases have been made by Moses Abramovitz.[2] When the importance of capital is measured by its relatively low return toward the end of the period, he concludes that the threefold increase in capital over the period might by itself have brought about a mere 14 percent expansion in production; even when the importance of capital is measured by its relatively high return at the start of the period, it appears that the increase by itself would have been responsible for no more than a 44 percent expansion. Whatever the importance attached to these particular estimates, it seems fair to conclude, in view of the fact that production per person actually increased by more than 300 percent, that the increase in capital alone has not been of major relative importance in explaining the increase of production in the United States. Moreover, it seems likely that the relative importance will decline even further as development continues.

Are research and innovation responsible for the remainder of the increase? The answer appears to be for most of it, but not for all. We know that the increasing portion of the population included in the labor force has been more than offset by decreasing hours of work, so that man-hours per person have decreased over the period. But the quality of the man-hours worked—as a result of better education, better health, and the decline in hours itself—is undoubtedly higher, despite possibly more frequent trips to the water cooler. In addition, there have been changes in both the quantity and the quality of the raw materials that we use. Moreover, broad institutional arrangements, which are the subject of Chapter 35, are also important and may also have changed for the better over the period. Because we cannot measure these changes, we cannot separate their influences from that of research and innovation. But granting that other factors have played a role, it seems impossible to deny, in the light of the vast changes in products and technology that have taken place since 1875, that research and innovation have been overwhelmingly responsible for the changes in real income that have occurred.

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[2] Moses Abramovitz, *Occasional Paper 52* (New York: National Bureau of Economic Research, 1956), p. 11.

### The Background of Research

Historically additions to fundamental knowledge have been predominantly a by-product of the educational system. Up to World War II the relative importance of educational institutions probably declined—as government and industry expanded their research activities, as necessary equipment became more expensive, and as the increasing numbers attending college diverted academic energies. In some areas of knowledge this trend may have been reversed since World War II by the rapid expansion of government research grants to educational institutions. Although sometimes liberal in scope, such grants generally have had the acknowledged purpose, not of increasing fundamental knowledge as such, but rather of achieving reasonably foreseeable military benefits. As a result, they have certainly distorted the balance between academic disciplines in favor of the physical sciences, and may conceivably have had the overall effect of reducing fundamental research by diverting to practical applications talent that otherwise might have been adding to basic knowledge.

Government's contribution to both fundamental and applied research has a long history, quite apart from the contribution government has made to educational institutions. The main reason for this is that state experiment stations and the federal Department of Agriculture have between them been responsible for most research in agriculture. Such research as has been done by private enterprise has been done, not by the individual farmer who is by and large too small and too poor, but by firms supplying agriculture, which in most cases are large in size and few in number. The overall result is that productivity in agriculture has been increasing steadily—and in recent years quite rapidly—but not, in the main, as a result of research done by private industry.

In fact, turning to industry's contribution to research, it can be argued that, the closer an industry is to being perfectly competitive, the worse is likely to be its research performance. To this there clearly are exceptions. Moreover, satisfactory research performance is hard to define because what can be invented is not known till the invention is made. But at least tentatively the contention appears to have merit. Such technologically "backward" industries as bituminous coal, textile spinning and weaving, housing construction, and the garment trades are all highly competitive (in the sense of having many small producers), whereas industries that would generally be conceded to be "progressive"—oil, automobiles, chemicals, electric utilities, the American Telephone and Telegraph Company—are either oligopolies or regulated monopolies. Note that at this point we are discussing research considered separately; we shall see that the situation regarding innovation is likely to be somewhat different.

### The Present Research Situation

The relationship between the organization of free enterprise and research performance is a matter to which we shall want to return. But let us first examine more fully the prevailing pattern of research. Table 29-1 summarizes estimates of total expenditure on research. Starting with the source of funds, it appears that government in 1945 financed under half and industry half the total. By 1959 the government's finan-

TABLE 29-1

Research in the United States

(In billions of dollars)

| | 1945 | 1950 | 1955 | 1959 | 1969 |
|---|---|---|---|---|---|
| Government | | | | | |
| Research financed | | | | | |
| Amount | 0.8 | 1.8 | 3.5 | 7.2 | 12.4 |
| Percent | 44.0 | 53.0 | 56.0 | 60.0 | 56.0 |
| Research performed | | | | | |
| Amount | 0.4 | 0.7 | 1.2 | 1.6 | 2.4 |
| Percent | 22.0 | 20.0 | 19.0 | 13.0 | 11.0 |
| Industry | | | | | |
| Research financed | | | | | |
| Amount | 0.9 | 1.5 | 2.5 | 4.5 | 9.0 |
| Percent | 50.0 | 44.0 | 40.0 | 37.0 | 40.0 |
| Research performed | | | | | |
| Amount | 1.2 | 2.4 | 4.3 | 9.1 | 16.5 |
| Percent | 67.0 | 71.0 | 68.0 | 76.0 | 74.0 |
| Colleges and Other Institutions | | | | | |
| Research financed | | | | | |
| Amount | 0.1 | 0.1 | 0.3 | 0.3 | 0.8 |
| Percent | 6.0 | 3.0 | 4.0 | 3.0 | 4.0 |
| Research performed | | | | | |
| Amount | 0.2 | 0.3 | 0.8 | 1.3 | 3.3 |
| Percent | 11.0 | 9.0 | 13.0 | 11.0 | 15 0 |
| TOTAL RESEARCH SPENDING | 1.8 | 3.4 | 6.3 | 12.0 | 22.2 |

SOURCE: Dexter M. Keezer, *Proceedings of the American Economic Association,* May, 1960, Table 1, p. 361, and Table 3, p. 363.

cial share had risen to 60 percent and that of industry had fallen to 37 percent, with educational institutions contributing out of their own resources a mere 3 percent. In that year half of all research performed by industry was financed by government, with the percentage reaching close to two thirds in the case of electrical equipment and close to nine tenths in the case of aircraft. But three quarters of all research was performed by industry, with government and educational institutions each undertaking about half of the remainder.

Between 1945 and 1959 total research expenditures increased from 1 to 3 percent of the national income. This is an impressive increase but, unless analyzed, it is likely to be misleading. First, around 90 percent of all government funds for research come from the Atomic Energy Commission or the Department of Defense. This means that over half of all the spending on research at the present time—involving rather more than 1.5 percent of the national income—has as its purpose the improvement, directly or indirectly, of military hardware. In fact, 80 percent of all government research contracts were received by the aircraft and electrical equipment industries alone. These two industries, plus the machinery industry, were found in a 1956 analysis of fourteen groups of industries to account for 60 percent of total research expenditures, and it seems likely that the concentration has increased since then.[3] At the other extreme, seven industrial groups—just half the total number—were responsible for less than 11 percent of research spending. Thus our present research effort is heavily concentrated in certain defense-oriented industries.

Moreover, as Table 29-2 makes clear, 70 percent of all research is for "development"—overwhelmingly product development—and another 22 percent is classified as "applied" research. Only 8 percent of total spending—involving perhaps a quarter of 1 percent of the national income—goes for "basic" or "fundamental" research.[4] Thus we spend on basic research as a whole only a little more than the automobile industry spends on annual model changes. In fact, at present all basic research—however financed and whatever its ultimate purpose—plus all applied research in the civilian sector of the economy barely amounts to as much as half of 1 percent of the national income.

There is also evidence that research is concentrated in large firms. As Table 29-3 demonstrates, the percentage of companies undertaking

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[3] National Science Foundation, *Science and Engineering in American Industry* (Washington: Government Printing Office, 1956).

[4] Defined as projects "not identified with specific products or process applications, but rather [having] the primary objective of adding to the overall scientific knowledge of the firm."

## TABLE 29-2

### Types of Research

(Percentages of total research performed)

| | 1945 | 1950 | 1955 | 1959 | 1969 |
|---|---|---|---|---|---|
| Government | | | | | |
| Basic | 8 | 8 | 8 | 8 | 15 |
| Applied | 30 | 29 | 28 | 27 | 35 |
| Development | 62 | 63 | 64 | 65 | 50 |
| Industry | | | | | |
| Basic | 4 | 4 | 3½ | 3 | 5 |
| Applied | 20 | 20 | 19½ | 19 | 25 |
| Development | 76 | 76 | 77 | 78 | 70 |
| Colleges and Other Institutions | | | | | |
| Basic | 50 | 47 | 44 | 43 | 50 |
| Applied | 40 | 40 | 40 | 40 | 40 |
| Development | 10 | 13 | 16 | 17 | 10 |
| Total | | | | | |
| Basic | 10 | 9 | 9 | 8 | 13 |
| Applied | 24 | 24 | 24 | 22 | 28 |
| Development | 66 | 67 | 67 | 70 | 59 |

SOURCE: Dexter M. Keezer, *Proceedings of the American Economic Association*, May, 1960, Table 3, p. 364.

## TABLE 29-3

### Concentration of Research in Large Firms

| Number of Employees of Firms | Percentage of Firms Undertaking Research |
|---|---|
| Less than 100 | 8 |
| 100–499 | 22 |
| 500–999 | 42 |
| 1,000–4,999 | 60 |
| 5,000 and over | 94 |

SOURCE: National Science Foundation, *Science and Engineering in American Industry* (Washington: Government Printing Office, 1956).

research increases steadily with the size of the firm. Further, companies with over 5,000 employees, which provided 40 percent of employment, were responsible for 72 percent of research expenditures, whereas firms with less than 500 employees accounted for only 10 percent of expenditures, although they provided 35 percent of employment.

To summarize, at the present time research expenditures of all sorts, though they have been expanding rather rapidly, are still around 3 percent of the national income and expenditures on fundamental research not more than one quarter of 1 percent. Of total expenditures, more than half is spent primarily to obtain improved military hardware; spending on all basic research, plus applied research to improve products of general economic usefulness, probably does not exceed a half of 1 percent of income.

### Research and the Logic of Free Enterprise

Chapter 6 explained why it is that, if certain basic assumptions are accepted, free enterprise tends to bring about an ideal allocation of the factors of production. There is no comparable rationale for the amount of research that takes place under free enterprise. Not only does the government currently finance 60 percent of all research, but, in addition, it determines the character of the patent system, which, more than anything else, determines the level of private spending on research. Further, we have suggested tentatively that the closer an industry comes to being highly competitive, the more inadequate is its research performance likely to be. This suggestion has been confirmed by the fact that the percentage of firms undertaking systematic research increases as they increase in size. It does not, of course, follow that the government has itself to undertake whatever research may be lacking, but it does mean that the broad pattern of research is something that needs to be consciously determined—as, say, the amount of education—rather than a matter that can be left to the automatic operation of a free enterprise system. The issue will repay detailed examination: the remainder of this chapter will concentrate on fundamental research, and the two following chapters will deal with practical research.

### Free Enterprise and Fundamental Research

If enterprises sought exclusively to maximize their profits, it is by no means certain that they would undertake any fundamental research whatsoever. Fundamental additions to knowledge cannot be patented; they can, therefore, accrue to the exclusive benefit of a firm only to the extent that they can be kept secret—which is by no means easy so long as research personnel are free to move among firms. Only where the number of firms is small and the returns from basic research are extremely high is there likely to be a direct profit incentive for a firm to undertake expenditures on basic research—and, to the extent that the information is not secret, its competitors will have received exactly the same benefit without having incurred any of the cost. It is possible, of course, that business may undertake basic research for reasons not related to direct profits: as a form of institutional advertising, for example, or as a social duty—similar to business contributions to education or to charity. But it is obvious that this sort of consideration is most likely to appeal to large enterprises or to small enterprises controlled by rich men.

There is, in fact, no agreement among businessmen that basic research is a business responsibility. We have seen that business expenditures on basic research amount to only 3 percent of total business research expenditures. True, a company such as Du Pont has undertaken basic research for more than thirty years and today believes that it spends more than any other company on such research. Moreover, Du Pont has benefited greatly, as nylon was a practical application of some of Du Pont's fundamental research.[5] Yet the president of Du Pont—himself a chemist of distinction—considers fundamental research to be primarily the responsibility of educational institutions.

Much of fundamental importance has, of course, come from commercial laboratories, with outstanding honors going to those maintained by General Electric and American Telephone and Telegraph. Both have produced Nobel prize winners and have made major contributions to fundamental knowledge. That basic research can pay off in practical results perhaps has been most spectacularly demonstrated recently by the transistor, which bids fair to replace the vacuum tube. But the list of industrial laboratories that have made, or appear likely to make, similar contributions is not long. In the opinion of *Fortune* Magazine they exist in the chemical, oil, and drug industries, and in Eastman Kodak and International Business Machines—all areas that are oligopolistically organized—but nowhere else in American industry.[6] Conspicuously absent is any company in the automobile industry. The case of General Motors is particularly notorious. Though its sales are larger than those of any other company in the world and its profits have been over a billion dollars a year, GM has only product-improvement research to its credit. The attitude that has marked General Motors in the past is typified by its onetime president, Charles Wilson, who scornfully dismissed basic research as worrying about "what makes grass green and fried potatoes brown."

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[5] The extent to which practical results need not accrue to the company responsible for the basic research is illustrated by dacron, which stemmed from the same basic research but was developed and patented by a small British chemical company from which Du Pont has a license.

[6] The inclusion of Eastman Kodak can be questioned. The development of the color process, for example, owes much to the work of two musicians whose research laboratory was a bathroom.

## The Need for Fundamental Research

How much fundamental research is socially desirable? This is a question that, of course, goes well beyond economics. For fundamental research seeks to add to knowledge, and it is the possession of knowledge that distinguishes man from other animals. Hence the question really becomes: How much knowledge do we want? Let us be clear that the knowledge provided by fundamental research may or may not have practical benefits. The essence of such research is that it does not seek to answer practical questions; it merely seeks to answer questions.

To illustrate, Langmuir, the Nobel prize-winning scientist of the General Electric Laboratory, one day became curious as to why water vapor in air did not turn into snow when the temperature fell below freezing. Experimenting in nothing more than a home deep-freezer, he found that the water vapor did not condense by itself until the temperature dropped to thirty or more degrees below zero: apparently prior condensation is prevented by the surface tension of the minute droplets. But when conditions are right, a chain reaction can be started either by cooling any part of the cloud sufficiently, as with dry ice, or by introducing silver iodide crystals, which resemble snow crystals and induce condensation rather as a celluloid egg induces a chicken to lay. What did all this experimenting achieve? Well, first—and in a basic sense most important—it satisfied Langmuir's curiosity. Second, General Electric got nothing; in fact when an effort to seed a cloud with dry ice coincided with a blizzard, the company's lawyers issued an urgent cease and desist order for fear that everyone in whose yard snow had fallen would sue the company for damages! Third, a fair amount of money is today being spent by farmers and growers who think that seeding clouds with dry ice or silver iodide affects rainfall.

But suppose the Langmuirs are still curious. Should they be allowed to spend more than one quarter of 1 percent of the national income satisfying their curiosity—money the rest of us might otherwise spend for things we want? The increasing recognition of the importance of basic research has led to an increase from perhaps a tenth of 1 per cent in 1945 to the present quarter of 1 percent. Is even more necessary? In my opinion, despite the progress made, no present use of funds is likely to be more "productive" in the sense of increasing future economic well-being than a further substantial expansion of expenditure on basic research. This opinion is based on two subsidiary judgments. First, the pursuit of knowledge for its own sake seems likely to continue to yield, as a by-product, much that can be applied to the solution of practical problems. Examples of practical achievements resulting from basic research, in addition to those already mentioned, are so numerous and well known that further elaboration of this point hardly seems necessary. Second, continued solution of practical problems at a rapid rate seems essential —for the same reasons that continued rapid economic development is itself essential.

### A Program for Basic Research

If an expansion of basic research is necessary, how can it best be achieved? The National Science Foundation, in outlining a program designed to encourage basic research, has proposed the following steps:

> 1. That private industry increase its support of basic research, both by more work in its own laboratories and by larger contributions to educational and other research institutions;
> 2. That state governments, with appropriate federal assistance, increase their support of basic research at state universities;
> 3. That the tax laws be changed to encourage additional philanthropic giving for basic research; and
> 4. That government agencies reduce the amount of development work under contract with educational institutions and increase significantly their support of basic research at all educational institutions which lack adequate private support—the federal support to be provided with minimum restrictions on the freedom of the scientist and the institution.[7]

Undoubtedly the basic requirement for the acceptance of any such program is a widespread recognition of the importance of knowledge for its own sake. So long as explorations of why "grass is green and fried potatoes are brown" are considered to be an immensely inferior activity to the production of cars with more and more chrome, we can expect to have an inadequate level of basic research. More specifically, achievement of the program requires, on the one hand, adequate financing and, on the other, appropriate organizations to perform the additional research. In the last analysis there are only two possible sources of financing: government and industry. It is hard to say whether it will be easier to persuade a congressman, up for election every two years, that he should raise his constituents' taxes to allow some long-haired scientist to fuss around with the weather than it will be to persuade the directors of General Motors that it is important to their stockholders that the way clouds develop should be understood. But if a significant increase in fundamental research is to be achieved, one or the other must be done. For neither educational institutions, hard-pressed by rapidly expanding enrollments, nor private foundations have the required sums.

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[7] Adapted from National Science Foundation, *Basic Research: A National Resource* (Washington: Government Printing Office, 1957), pp. 6–7.

In the case of industry, the choice is between doing more fundamental work itself or making more funds available to educational institutions. Almost certainly, both alternatives are necessary, and we need not concern ourselves with the exact balance between them. In the case of government, and especially the federal government, the problem is that, for research as for expenditure in general, spending for destruction is acceptable but spending for constructive purposes controversial. This is perhaps better than nothing; had it not been possible to make an atomic bomb, it is hard to see how we would have achieved atomic energy. And there is no doubt that in many areas the present vast federal spending on military research is achieving results useful outside the military field. But the present heavy emphasis on improvements of military hardware has had repercussions on fundamental research at best incidental and at worst adverse as able scientists are diverted to the solution of practical problems. The current effort, for example, devoted to the development of solar energy is relatively insignificant, yet ultimately solar energy may well turn out to be as important as, if not more important than, atomic energy. True, a start on encouraging basic research has been made: appropriations for the National Science Foundation have risen from $225,000 in 1951 to around $50 million in recent years. But the size of the job still to be done is immense. To indicate its size, if the Foundation were to be made the dispensing agency for the further encouragement of basic research, in my judgment its appropriation might well be raised rapidly to a billion dollars a year—which would still leave expenditures on basic research at perhaps half of 1 percent of the national income.

The suggestion that expenditures of this size are desirable does not imply that the research need be performed by either the federal government or the Foundation. Because the results of basic research are particularly difficult to predict, the greatest possible variety—confusion, if you will—of actual performance seems desirable. In fact, a case can be made that we are behind in rockets, not because of too much rivalry between the armed services, but because of too little competition between rocket systems and too early efforts to determine the system with the greatest potential in the interest of eliminating duplication.[8] Much of the funds at issue could be expected to go to educational institutions, including separate research institutes (such as the Institute for Advanced Study at Princeton). Grants, particularly matching grants, might also be made to outstanding industrial laboratories, with work in the government's own laboratories expanding only to the extent that they were best qualified to perform the research in question. Further, to the extent that industry, either directly or by grants to educational and research institutions, picked up the burden, the activity of the federal government might be equivalently reduced.

But, to repeat, the job to be done is immense and will be costly. Part of the high cost results from the fact that our educational system, which must inevitably undertake much of the work, is already being asked to cope with unprecedented numbers of students—with little expansion of personnel and even less of plant. In addition, the cost will be high because, to a significant extent, a vacuum is being filled: neither industry nor government, thus far, has accepted responsibility for the encouragement of nonmilitary fundamental research. That expenditures on such research will "pay off" seems certain; the main danger is that we will invest inadequately.

[8] Burton Klein, *Fortune,* May, 1958

# 30

# The Role of Practical Research

## Practical Research in the United States

Compared with basic research the importance of practical research is easy to understand. Everyone is aware that our life is being continually changed by the development of new and better products, made in new and better ways. Almost all large firms, as we have seen, have product-development programs, and total research expenditures have been increasing rapidly. But there appear to be two main problems remaining. First, in areas where the total level of spending is large, the emphasis is all too often on highly "practical" research of the "product-improvement" sort, which leaves what we may call "basic applied research" seriously neglected. Second, there are many areas of the economy where the firms typically operate on such a small scale that they cannot afford to finance expensive research programs of any sort. Of the two the latter is probably more important quantitatively, but let us consider the former first because it applies to all areas of the economy.

## The Importance of Basic Applied Research

Although product-improvement research obviously is of use, by itself it is clearly not enough. To illustrate, Pratt and Whitney, Curtiss-Wright, and the Allison Division of General Motors dominated the transport aircraft engine field in 1940. Although all three spent large sums on research, none made any important contribution to the development of gas turbine engines; yet in the two decades since 1940 such engines have almost entirely replaced the reciprocating engine for air transport use.

Actually the most important single contribution on the Allied side was made by a junior officer of the RAF, who started work before World War II in a ramshackle shed on a government grant of a few thousand pounds!

Again one would have thought that the Radio Corporation of America, the outstanding research organization in its field, would have been responsible for the development of FM (frequency modulation) radio. Instead, its director of research went on record in the early thirties that FM radio was impossible. The invention and the commercial exploitation were both brought about by Armstrong, who developed the equipment and built a transmitting station to demonstrate FM's superiorities to a skeptical Federal Communications Commission. This, ironically enough, he was able to do as a university professor because he had previously sold an invention to RCA for close to a million dollars. Despite the fact that the invention turned out to be useless, its sale provided the funds that made the development of FM possible! Though it has been suggested that RCA did not want FM developed for fear that it would have repercussions on the monopoly profits (resulting from physical limitations on the available number of channels) being earned by its broadcasting subsidiary, let us give RCA the benefit of the doubt and credit the failure to an error of judgment on the part of the research director. But, whether through error or by intent, the fact remains that FM radio is an important improvement that did not result from industrial research despite its obvious commercial value.

What is needed, then, is more emphasis on basic applied research—research not designed merely to improve existing types of aircraft engines but to explore quite different ways of using fuel to move aircraft. To the extent that businessmen accept the need for more fundamental research, they are also likely to accept the need for more basic applied research. But, to the extent that fundamental research is financed by government and performed by educational institutions, a major problem will remain. Though this is still another matter on which there is little agreement among economists, in my judgment the problem has two aspects: first, returns to a firm from basic applied research may be so small as to reduce significantly the extent to which such research is carried on; and, second, the competitive organization of industry does not necessarily promote such research in the most effective manner.

### The Rewards from Basic Applied Research

It may well be that the more important an invention is, the less important it is to the individual firm involved. What is at issue here is more than the fact that research costs may not be covered by the direct benefits achieved. For "inventing" may frequently be carried on at a direct loss—as witness the fact that few if any firms support themselves by selling inventions.[1] The incentive for research frequently comes, not because it is directly expected to "pay off," but because without it the firm fears that it will lose out in the overall competitive struggle. But, if the invention is basic enough, it cannot be denied competitors and therefore is not likely to have any significant effect on the competitive struggle. To the extent this analysis is correct, it suggests that there is very much less incentive to undertake basic applied research than the routine research so important in determining the short-run competitive position of the firm.

To illustrate, the importance of few inventions was as clearly foreseen as television. Yet RCA—very much to its credit, for millions had to be invested before any commercial benefit was achieved—alone among producers of radios attempted the development of TV.[2] Why in the mid-thirties did Philco, then producing more radios than RCA, decide not to spend money on TV development? The most plausible explanation appears to be that Philco was sure that, if RCA was successful, patent licenses would have to be made available—and made available more cheaply than a patent position could be achieved by independent research. In this judgment Philco was almost certainly correct, for the extent to which the antitrust laws have been construed to bring about what comes reasonably close to compulsory patent licensing has been steadily increasing in recent years. Perhaps the most striking case involves the Aluminum Company of America, which had had a monopoly of primary aluminum production before World War II and held a valid patent on the best available production process but, nonetheless, was induced to license its patents to Kaiser and Reynolds—presumably through fear of continuous antitrust prosecution in the event that licenses were withheld.

RCA itself, moreover, was held guilty and fined in 1958 under the antitrust laws on several counts, including (1) the stifling of competition by an agreement that gave RCA the sole right to license the patents in its field belonging to General Electric, Westinghouse, and American Telephone and Telegraph; (2) the stifling of research and development by its refusal to license its patents except in packages that included thousands of patents a licensee might or might not want; and (3) the reduction of international competition in both sets and patents by various agreements with foreign producers. One can agree completely that the elimination of the practices objected to by the Department of Justice had the immediate effect of increasing competition and, at the same time, be concerned over the extent to which the department's action vindicated the decision that Philco made in the thirties not to engage in television research. For it is obvious that if the decision to license one's patents in packages stifles competition, the decision not to license them at all would be even more unacceptable. In short, why should Admiral today invest money in research on color television or American Motors invest money in studying the application of gas turbines to automobiles? When color catches on commercially or the gas turbine proves superior, the patents will obviously be available to all comers. But, if everyone waits for the work to be done by someone else, is it likely to be done as rapidly as is socially desirable?

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[1] Many firms sell research services, but such services are bought for the same reasons that firms carry on their own research.

[2] The efforts of the Farnsworth interests to achieve marketable television patents is one of the few cases I know where an attempt was made to make money from substantial investment in the development of an important invention.

### Competition and Basic Applied Research

Nothing is harder to decide in advance than the best way of achieving a desired result. Thus preliminary work suggested five methods of obtaining the material for an atomic bomb. Because we were at war, all five were tried. "As it turned out, one of the methods least favored in the early betting because it appeared so fantastically complicated—an electromagnetic separator—was actually the one that produced the material for the first bomb."[3] How can we be sure that all five possibilities get explored in peacetime? At first glance it might seem that the competitive organization of industry would automatically ensure the exploration of all the likely ones. But there is little reason to believe that, if there are five possibilities and five firms in the industry, each possibility will be systematically explored by one of the firms. Instead, each may concentrate on the most likely solution. Economists know relatively little regarding the research strategy of competitive firms. There may well be cases where small firms gamble on unorthodox alternatives; an example would be the development of fluorescent lighting by Sylvania when the company was restrained by General Electric's patent monopoly from efforts to improve incandescent lighting. But it is generally agreed that fear of loss of competitive position is likely to be a stronger spur than hope of gain; and fear of loss dictates doing whatever the other firms are doing so as not to be "caught short."

How can these problems be dealt with? Obviously the worst possible way of handling the matter would be to centralize the basic applied research of an industry and then, in the interests of efficiency or economy, to concentrate entirely on what presently appears to be the most likely possibility. But what if central direction assigned one of five to each of five firms? It seems likely that assigning a different possibility to each semi-independent "trust" is the way the central research director of a Russian industry would proceed. We know in any event that the Russians are ready to permit considerable "duplication" and "confusion" so long as results are achieved. Might not something similar ensure more rapid results in the United States?

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[3] Burton Klein, *Fortune,* May, 1958, p. 113.

Before considering further the general problem of how basic applied research can best be encouraged, let us turn first to a discussion of the second of the two main problems presented at the start of the chapter: the difficulties raised by areas of the economy where production is organized on such a small scale that relatively little research of any sort is carried on—whether basic or otherwise.

### Small-Scale Industry and Research Performance

Cotton growing is the poorest paid large segment of agriculture; several of the states involved have average incomes that are among the lowest in the United States. Hence the need for increased productivity is obvious and urgent, and now gives signs of being met. It looks as if it might be possible, in many areas at least, to cut the labor required in growing cotton by ultimately as much as 90 percent. Why was so revolutionary a development so long in arriving? The main reason is that the solution was beyond the scope of any firm connected with the growing of cotton. Approximately as much labor is required in weeding and thinning out the cotton plants early in the season as is required in picking the crop after it has ripened, so that if a large amount of labor is to be released, both picking and weeding must be simultaneously mechanized. Knowing this, cotton growers have not been particularly enthusiastic about mechanical cotton pickers, for unless they retained labor on a year-round basis by devices such as sharecropping, they would be unable to get the weeding done.

As a result, though the need for a mechanical picker was obvious, its development was slow. In fact, the first successful model was produced by an individual inventor working with quite limited resources, rather than by the farm implement industry. Real progress was not made until the oil and chemical industries, looking for outlets for their products, developed flame and chemical weed killers that gave promise of substantially eliminating hand weeding. It is the combination of mechanical picking and chemical weeding that bids fair to revolutionize cotton growing.

What remains to be done is to redesign the cotton plant to meet the needs of mechanical pickers. Actually much work along these lines is regularly being done, predominantly by government research stations. As a result of one such development, which made available a new type of cotton suitable for growing in California, that state since World War II has become, in addition to its other achievements, the second largest producer of cotton (after Texas).

In short, a revolution of vast significance for the South has been slow in coming, largely because no one invention or improvement is involved. A full solution is going to require joint action by the agricultural implement industry, the chemical industry, and the government's research stations. Only the cotton grower himself is not involved! Is there any way that so promising a revolution might have been brought about more rapidly?

### The Case of Bituminous Coal

Or take the case of bituminous coal—an example deliberately chosen because it is less one-sided. The opportunities for coal are immense. It is available in far larger quantities than any other fossil fuel, and, in contrast to Great Britain where people apparently still like open fires, the American demand is overwhelmingly for the BTU's the coal contains rather than for the coal itself. The challenge is how the BTU's can be most efficiently made available. Coal mining is not only dangerous but until very recently has been appallingly wasteful of manpower. Historically, after the coal had been blasted loose, it was broken into lumps of manageable size by hand picks and loaded into mine cars with hand shovels. The work involved was—and is—extraordinarily hard physically, especially as the humidity frequently runs close to 100 percent. By the time of World War II, most coal was undercut mechanically; but less than half was mechanically loaded and productivity (measured in tons per man-shift) was only twice what it had been in 1890. There was no other industry in America which, as late as 1940, manhandled so large a tonnage of so basic a commodity. Clearly the social performance of the industry left much to be desired.

On the other hand, there are many possibilities of a revolutionary sort. One is to turn the coal into gas underground. Technological developments in drilling make it possible to drill horizontally with extreme accuracy, so that it is possible to ignite the coal underground, control its combustion by controlling the inflow of air and water vapor, and get a usable gas as a product. Experiments under the auspices of the Bureau of Mines in this country have been disappointing, but Russia is said to produce as much as 20 percent of its manufactured gas by underground conversion. Alternatively, machines are available that remove coal from the seam and carry it to the surface in a continuous operation, without cutting or blasting, so that muscle power is completely eliminated. Once the coal is on the surface, revolutionary kinds of transportation are possible. Powdered and mixed with water, coal is now being moved by pipeline. Or coal may be converted into gas or electricity at or near the mine, eliminating transportation. In the past, when coal was used for house heating, in locomotives, and in other small-scale furnaces, lumpy coal was desirable and brought a premium price, which in turn made full mechanization difficult, as mechanization tends to reduce lump size. But powdered coal loses none of its BTU's and has long been burned successfully by power plants appropriately equipped with mechanical stokers, which are sure to increase in importance as house heating and locomotive use declines and will bring with them significant increases in the cleanliness of cities. In the other direction, powdered coal may be recombined into briquets of ideal size for use without mechanical stokers.

It is, however, hard to see how possibilities of this sort can be developed by small-scale firms engaged in such rigorous competition that their survival is often a matter of doubt. Nor have those who supplied machinery to the industry been much better off, as they too have been small-scale. But under the impact of the expansion of oil and natural gas in the postwar period—which cut coal use 30 percent in the two years following 1947 and even more by 1954—significant changes have taken place. In 1950 productivity (tons per man-shift) was 31 percent higher than it had been in 1940; ten years later it had increased an additional 90 percent. Over the entire period from 1940 to 1960, productivity improved by almost 150 percent—an increase significantly greater than had taken place in the previous fifty years. In fact, in the five years from 1950 to 1955 productivity increased by over 50 percent. This is an impressive achievement, but it was not achieved until competition from oil and natural gas became devastating. Is there any way in which the recent gains could have been achieved sooner? And how can the immense possibilities remaining be rapidly realized?

## Practical Research and the Patent System

The question that these examples of cotton and bituminous coal have raised is the extent to which private industry, particularly when it is organized on a small-scale and highly competitive basis, can be depended on to provide the socially desirable amount of practical research. The main incentive—itself the result of specific government action—for undertaking private research is the patent system, which gives to an inventor the exclusive use of his invention for seventeen years. Although a system that permits an inventor to monopolize the benefits of his invention for a reasonable period of time seems clearly desirable, the actual reward involved is hard to anticipate. Just as a solution is reached, another inventor may patent the idea. Or the well-paid legal staff of a large corporation may break the patent by claiming that the idea was previously known. The first thing RCA did, for example, when it felt obligated to buy the invention, which proved to be worthless but enabled Armstrong to finance FM, was to see if the idea had not been anticipated. They found that an Englishman had indeed patented something similar, but had subsequently joined the Colonial Service and was then stationed on the Upper Nile. When an emissary at long last reached him, RCA received a cable which read: "Patent bought by a man named Armstrong." Such foresight on the part of a college professor so impressed RCA that they paid out the million dollars without further delay. But without it Armstrong's invention might have brought him nothing. When the rewards are so unpredictable, it would indeed be a miracle if the amount of research by private industry that results from the availability of patents were to be the amount that is socially desirable.

On the other hand, it is obvious that the "socially desirable rate" cannot easily be given precise meaning: it depends on how much we are prepared to give up today to have more tomorrow—not only for ourselves but for our children. A selfish man who has no children may see no reason for undertaking any present expenditure unless the results will be available in his lifetime. But men acting together as a society feel quite differently about the matter, and even men as individuals are prepared in war to die to provide benefits to those who survive them. Clearly a full definition of the "socially desirable rate" is a complicated matter.

### Evidence from Agriculture

Even if we can say little with precision regarding the socially desirable amount of research, some of the magnitudes involved may be illustrated. Let us take agriculture as an example.

From 1910 to 1950 farm labor decreased by 28 percent, but this was more than offset by the increased use of other factors of production, including land but more especially various forms of capital such as fertilizer and machinery, so that "inputs" as a whole increased. If the importance of "inputs" is measured by their relative prices in 1946–1948, the increase was 14 percent; if the 1910–1914 prices are used as weights, the increase was 33 percent. But over the same period output increased 75 percent, so that productivity (output per unit of input) increased between 32 and 54 percent, depending on the weights used. As a result in the year 1950 "inputs" were from $9,600 million to $16,200 million—again depending on the weights used—less than they would have been had there been no increase in productivity after 1910. But in 1950 state experiment stations and the federal Department of Agriculture spent only a little over $100 million on research, with extension work costing a further $75 million, or an overall total, including private agricultural research, that may well have been under $200 million.[4] Had this rate of spending on research and innovation been maintained for 40 years, the total would have reached $8,000 million—which is *less than the smaller measure of "inputs" saved in 1950 and less than half the larger measure.* Hence Professor Schultz's conclusion appears hard to deny: "It is our belief that an economic analysis will show that, while the expenditures [on agricultural research] are large relative to past outlays and compared to what other countries spend for these purposes, the resources committed annually would have to be increased very substantially before the rate of return from this stream of inputs would not exceed that obtained in production activities generally."[5]

Alternatively let us look to the future. An estimate has been made of the country's probable food requirements in 1975. Two alternatives were investigated: one assumed that productivity would increase from 1950 to 1975 at 1 percent annually, the second that it would increase at 2.4 percent annually. With the same amount of land (10 percent more than at present) meeting 1975 food requirements under the first alternative was estimated to require 21 percent more labor, 24 percent higher current costs other than labor (gasoline for tractors, fertilizers, and the like), and 39 percent higher capital costs (tractors and other mechanized equipment).[6] Because we do not know what it would cost to achieve a 2.4 percent rather than a 1 percent rate of increase in productivity, it is not certain that achieving the higher rate is the most economical way of meeting our needs. But the labor alone that would be saved would amount to more than a million workers, and the total costs of producing 1975 requirements would be perhaps 20 percent lower. Further, this would be a permanent and continuing saving in production costs, while the research that made the saving possible would have to be paid for only once. Thus even if the cost between 1950 and 1975 of the additional research were exactly equal to the saving in production costs that such research achieved up to 1975—so that we were no better off till 1975—we would still be very much better off at that time, as costs would continue to be 20 percent lower even if research expenditures were then terminated. Hence the probability that the cheapest way of meeting our 1975 food requirements is by stepping up research in the interim seems high indeed.

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[4] Theodore W. Schultz, *The Economic Organization of Agriculture* (New York: McGraw-Hill Book Company, 1953), pp. 108–109, 119, 120.

[5] *Ibid.*, p. 113.

[6] Vernon W. Ruttan, *Review of Economics and Statistics*, February, 1956.

### Research in Other Areas

Is this conclusion likely to apply to other areas besides agriculture? Any answer is an opinion and should be labeled as such. But I believe that a relatively rapid doubling of the present level of expenditure on nonmilitary practical research in all probability would provide a higher rate of return, in terms of future increases in national income, than any alternative use to which the funds at issue could be put (barring only the increase in fundamental research already proposed). It may well be that an even greater increase might ultimately be desirable when time permits facilities to be increased and additional staff to be trained. The chapter to follow will be devoted to a discussion of how such an increase can best be achieved.

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# The Role of Practical Research (Continued)

### Problems to Be Solved

The case for the social desirability of an expansion of practical research is clearer than the manner in which such an expansion can best be achieved. To the extent the foregoing analysis is correct, two main problems must be solved. First, a general encouragement of research in the small-scale, highly competitive areas of the economy is needed. Second, the achievement of more basic applied research is required in the areas of the economy marked by large-scale production and relatively adequate overall research expenditures. For the first problem, two sorts of solutions appear possible: increases in the scale of production in the hope of improving research performance within the free enterprise framework; and government encouragement of research. Both alternatives are controversial—the former being anathema to liberals who distrust large-scale business and the latter anathema to conservatives who distrust large-scale government. The discussion that follows, therefore, is unlikely to command widespread agreement. Regardless of whether the desirability of increases in the scale of production is accepted, a discussion of the relationship between research performance and large-scale production should clarify some aspects of our present-day American economy. Let us start, therefore, with a consideration of the contribution to improved research performance that might be made by changes in the scale of production and then consider possible encouragement of research by government action.

### Research, Large-Scale Production, and Oligopoly

Large-scale production means merely that a firm produces on a relatively large scale—say, is among the firms with over 5,000 employees that provide 40 percent of total employment. Conversely small-scale means just the opposite—say, that the firm is among those with less than 500 employees which provide 35 percent of total employment. Again, as we have seen, oligopoly merely means that there are few sellers in an industry. Hence large-scale production and oligopoly are not always the same thing. If the industry is large enough, it may have many large-scale firms; if it is small enough, it may have only a few small-scale firms. In general, however, there is likely to be considerable correlation—if only because scale is usually defined with reference to the situation currently prevailing in the economy.

Undoubtedly there are cases in which more research is undertaken by an industry with many small-scale producers than by one with a few large-scale producers. But these are likely to be very much the exception rather than the rule. We have seen that the larger the firm, the more likely it is to have a research program. And there are clearly types of research—such as those requiring large expenditures and much equipment—that cannot be undertaken by small-scale firms. Moreover, it is hard to think of research done by small-scale firms that cannot also be done by firms operating on a larger scale. Hence, although not all economists agree that increasing the scale of production will typically bring about an expansion of research, it appears to me likely that, other things equal, large-scale production will be correlated with large-scale research expenditures and therefore with the probability of a more rapid increase in productivity.

Note that the word used is "probability." One reason that there is so little agreement on this matter is that the oligopoly likely to be associated with large-scale production can have many results. If it results in a market-sharing device or, more specifically, an agreement to restrict research expenditures and to hold up the introduction of new products, then obviously the probability will not be realized and the oligopoly in all regards will be inferior. But agreements tending to restrict research appear to be rare among American oligopolies (though more frequent in Europe), so that this sort of danger seems unlikely to be of practical importance in the United States.

### Excessive Profits and Rapid Development

Perhaps the most general objection to oligopoly is that it is likely to lead to excessive profits. It can readily be shown, however, that if more extensive research under oligopoly leads to development that is only a little more rapid than would otherwise occur, the resulting more rapid development will quickly offset whatever adverse effects the higher profits may have on the distribution of income. Assume that under oligopoly corporate profits amount to 18 percent of income and that under competition they amount to only 6 percent. (The assumed difference is probably extreme: it is quite unlikely that oligopolies are three times as profitable as competitive industry.) As was pointed out in Chapter 12, half of the 12 percent of additional profit assumed to be received by oligopolies would be paid to the government in additional taxes, so that replacement of competition by oligopoly would cause a net reduction in the income of nonowners of corporations of only 6 percent (the amount retained by the oligopolies after payment of additional taxes).

Recall also that, of this 6 percent, somewhat less than half is typically saved and somewhat more than half is paid out as additional dividends. Who benefits from corporate saving is debatable. We may avoid the issue by simply seeing how much more rapidly productivity would have to increase to offset initial declines in nonowner income of both 3 and 6 percent. Since 1870 the increase in productivity per person has averaged 1.9 percent.[1] Table 31-1 summarizes the number of years that would be needed for various differences in the speed with which income increases to make up for the initial declines in the income of those not owning oligopolies.

**TABLE 31-1**

**Years Required to Offset Initial Income Declines**

| | Number of Years Required | |
|---|---|---|
| Productivity Difference | To Offset 3 Percent | To Offset 6 Percent |
| 0.2(1.8/2.0) | 16 | 32 |
| 0.6(1.6/2.2) | 6 | 11 |
| 1.0(1.4/2.4) | 4 | 7 |

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[1] Moses Abramovitz, *Occasional Paper 52* (New York: National Bureau of Economic Research, 1956), p. 7.

What this table means is that, when productivity in the economy as a whole is increasing at 1.9 percent a year, if oligopoly situations achieved a 2 percent rate and competitive situations a 1.8 percent rate of productivity increase, even the small 0.2 percent difference would compensate nonowners for the additional dividend payments to owners in 16 years; were the difference as large as 1 percent—2.4 percent for oligopolies and 1.4 percent for competitive industry—the time required would be a mere four years. Moreover, to offset both the additional dividend payments to owners and the additional saving would take not more than thirty-two years, even if we disregard the possibility that the additional saving might itself contribute to more rapid development. Clearly if large-scale oligopoly does develop appreciably more rapidly than small-scale competitive industry, the faster rate of development will rapidly compensate for the adverse income distribution, providing higher real incomes even for those who were originally adversely affected.

A quite similar line of analysis has been used in three different connections, so that a recapitulation is in order. In Chapter 12 we pointed out that, in part because of corporate taxes and saving, the impact of corporate monopoly profit on the economy was relatively minor. Again in Chapter 20 we used information from Table 31-1 to show that, if setting aside 6 percent of the national income as an "incentive fund" to reward able people were to lead to more rapid economic development, even those who received nothing from the fund would nonetheless soon benefit as a result of the more rapid development. Finally, we have just shown that a significant increase in the degree of monopoly in the economy—which is in effect involved in going from our assumed competitive situation to our assumed oligopolistic situation —would also have no more than temporary adverse effects if it led to more rapid economic development (again in part because of corporate taxes and saving). What emerges from these comparisons—and justifies the somewhat repetitious presentation—is that remarkably small differences in rates of development will offset, in quite short periods of time, adverse effects on income distribution caused by either an increase in personal inequality or an increase in the importance of oligopoly.

## Should Large-Scale Production Be Encouraged?

If the higher profits that may result from oligopoly are not particularly serious, does it then follow that large-scale production should be encouraged as a matter of social policy even if it results in oligopoly? The danger that explains why most economists would in all probability deplore such a development is that the reduction in competition that today permits wider profit margins may tomorrow spread to other areas and activities, so that in time the few surviving producers may drift into market-sharing, live-and-let-live arrangements under which first innovation, and ultimately research itself, may be greatly reduced. That this is a possible danger cannot be denied; how probable it is is harder to estimate. In a particular competitive industry, the dangers inherent in oligopoly can be partially avoided by relying on oligopolistic suppliers to provide research and development. Unfortunately this is not necessarily a full or lasting solution, as the competitive industry may not have the financial resources to adopt new techniques—which in turn will inevitably discourage the development of improved technology by the industry's suppliers. And there is also no reason why the suppliers may not themselves in time drift into market-sharing arrangements.

Concentration, it is worth stressing, is not a new problem separately created by efforts to promote research and development. Rather, it is a problem with which we have to deal in any event. Specifically it now appears highly unlikely that any new firms will ever again be able to enter the automobile industry and it is by no means certain that more than four will survive. The problem of making these four continue to compete is, therefore, one we must in any event solve if free enterprise is to remain viable. It is not clear how much more difficult achieving a general solution would become if the number of oligopolistic industries were somewhat increased.

On the other hand, the benefits of large-scale production must not be overstated. At best it makes probable—but by no means guarantees—large research expenditures and more rapid development. We have seen that the highly competitive bituminous coal industry—at least under intense enough pressure from alternative fuels—has been able to develop rapidly, though the recent improvement has been accompanied by a somewhat greater concentration of production.[2] And anthracite coal appears to be, if anything, even less progressive than bituminous despite the fact that it is organized oligopolistically. Here the problem appears to be that bituminous coal is a substantially cheaper source of BTU's than anthracite, which has enjoyed a special market, especially in house heating, because it produced less smoke. Hence an aggressive effort on the part of an anthracite producer to expand sales by lowering costs and prices would have involved trying to expand into markets where bituminous had a natural advantage. Instead, the response of the anthracite producers appears to have been to share the available special market—a response that not only has left the industry unprogressive but has

[2] At present sixty firms are responsible for about two thirds of total production.

caused production to decline by over 60 percent between 1948 and 1958. There can be no doubt of the fact that oligopolistic organization does not by itself guarantee that an industry will be technically progressive.

Overall the desirability of encouraging large-scale production—and risking oligopoly—in my judgment is a matter of alternatives. In view of the smallness of the effective increase in profits under oligopoly and the probability that on balance development is likely to be significantly more rapid, encouragement of large-scale production does not seem without merit—provided that no effective alternative is available. Specifically, suppose that, instead of the actual thousands of small-scale producers, the bituminous coal industry had been organized since World War I into an oligopoly with ten to twenty large firms—in roughly the pattern that developed in the oil industry following the Supreme Court's dissolution of the original Standard Oil monopoly in 1911. Had oligopoly prevailed, I believe that the technology of mining coal would by now have been revolutionized and the social performance of the industry would have been substantially superior to what it has been. It should be emphasized, however, that this judgment is likely to be valid only if the level of competition that prevails is not less than has been maintained in the United States in recent years; it is definitely not likely to be valid in an economy of cartels and monopolistic agreements. But in the American situation the emergence of large-scale production—despite the accompanying expansion of oligopoly—may well have contributed significantly to the speed with which our productivity has increased.[3] Before attempting to reach a final decision on the overall social desirability of encouraging large-scale production, however, let us consider whether as an alternative more rapid economic development can be better achieved by government encouragement of research.

## Government and Practical Research

In view of the progress that America has made under free enterprise, any suggestion that the government should expand its activities and accept new responsibilities in connection with the encouragement of practical research is inevitably controversial. Let us therefore recapitulate the analysis that brought us to contemplate so dire a possibility. There is general agreement that, left to their own devices, people do not spend enough on education and that the performance of the economy benefits from the provision by government of additional educational opportuni-

[3] Obviously, the question of the desirability of large firms raises issues that go beyond economics—as illustrated, for example, by the contention that such firms have excessive political power. Discussion of such issues is beyond the scope of a volume on economics.

ties. What is here being suggested is that, somewhat similarly, industry as presently organized does not undertake sufficient practical research and that the performance of the economy would benefit significantly from additional research. In contrast to education, however, it is not necessary for the government itself to provide the additional research—any more than the government produces planes or tanks or guns when they are needed. It is merely necessary for the government to accept responsibility for seeing that an appropriate level of research is achieved.

How could government best discharge such a responsibility? Some overall direction would clearly be necessary. For an important purpose of the program would be to correct the present lack of balance in research expenditures. There is, of course, no reason why such expenditures should have any particular uniformity among industries, but it seems equally unlikely that the present pattern of expenditures is socially desirable. Hence enough central control would appear desirable to permit reasonable concentration on areas with greatest needs and most promising prospects—perhaps chosen on the basis of joint recommendations by the National Science Foundation and the Council of Economic Advisers. But once reasonable balance among industries had been achieved, substantial autonomy would appear desirable. Even more than in the case of fundamental research, an approach emphasizing variety seems essential to utilize to the fullest possible extent available facilities of industry, government, and educational institutions—much as they are today used to develop a guided missile.

### The Possibility of Productivity Institutes

A device that certainly would deserve serious consideration in the implementation of any program of government encouragement of research would be the establishment of government-sponsored productivity institutes in areas of the economy where increases in productivity seem especially urgent. Suppose, for example, a Cotton Productivity Institute had been set up in 1920 and had been promised 1 percent of the value of the cotton crop for as long as it was able to make a significant contribution to the improvement of productivity in growing cotton. Would the revolution that now appears probable have come more rapidly? The answer obviously depends on the quality of the leadership of the institute. The sum involved could easily be spent by incompetent people without achieving anything of consequence. But with reasonably competent leadership that attempted to enlist the aid of private industry by subsidy or otherwise wherever possible and undertook work itself only when there was no one else capable of doing it better, it seems probable that the revolution might well have been significantly expedited. Because of the small scale of the typical cotton grower and the interrelated character of the solution, a Cotton Productivity Institute might well have made an unusually important contribution, especially if it worked closely with the chemical and farm implement industries. In fact, given the practical impossibility of achieving anything remotely resembling large-scale production in the growing of cotton within the foreseeable future, it is hard to see how cotton-growing technology can be improved except by a device such as a productivity institute. The only alternative is to accept the rate of development that results from the fact that the chemical and farm implement industries, which supply cotton growers, happen to be oligopolies operating on a large scale.

### Productivity Institutes and Basic Applied Research

Would a Coal Productivity Institute be able to make as vital a contribution? In this case it is possible to place greater reliance on large-scale production, as mergers of present firms until production on the required scale is achieved is certainly technically possible. But a Coal Institute, nonetheless, may have a contribution to make—especially in connection with the encouragement of basic applied research. It seems quite unlikely that, for example, the possibilities of underground gasification are today receiving the attention they deserve. Again, technological help regarding radical improvements in the transportation of coal (such as movement of coal through pipelines) is currently being provided by the electric power industry—ironically enough, mainly as a result of the vast demand for electric power created by the atomic energy program. But it is by no means certain that all promising alternatives in regard to transportation are being explored to the extent desirable.

These particular instances are merely examples of a problem that may be quite general throughout American industry: that there appears to be inadequate profit incentive in many areas of the economy to provide the socially desirable level of basic applied research. Would the wide establishment of productivity institutes provide an effective solution to this problem? The possibility is one on which, in the absence of actual experience, we can do no more than speculate. If the productivity institute made its results available to all at reasonable fees, it is quite likely that its only effect would be to relieve everyone in the industry of any sense of obligation to undertake basic applied research—just as most radio producers felt, as we have seen, no obligation to develop television. Undoubtedly this result would be even more likely if the institute were financed directly by the firms of the industry; in fact, if the amounts to be paid were controlled by the firms involved, the institute might well become a device to reduce research expenditures. And if the institute were to be granted any sort of monopoly over improvements by, for example, a requirement that all patents be sold to it at reasonable prices, the results would be infinitely worse than anything that presently prevails. In short, to the extent that the institutes were organized to undertake joint research *under the control of* the industry involved and *without government supervision,* there is no doubt that the idea raises serious dangers.

But suppose, alternatively, that the institute's funds come primarily from the government—either from taxes on the industry or from general revenues; suppose that the institute, while licensing all comers, charged the highest fees that the traffic would bear on the patents it came to hold; and suppose that, far from being granted any sort of monopoly, the institute operated in full competition with the research departments of all the firms in the industry. Particularly if individual firms were given, in the enforcement of the antitrust laws, somewhat greater freedom to exploit the inventions that they were able to develop in competition with the institute, it appears to me that institutes so organized might make a significant contribution. At the very least, the government would be in a position to ensure that resources were devoted to basic applied research in the amounts and in the areas where they seemed likely to do the most good—though mere devotion of resources to research, of course, carries no guarantee that results will be achieved. But the institute might also serve to *encourage private research* both directly by charging licensing fees that were *higher* than a private patent monopolist would now be likely to charge in view of our antitrust laws and indirectly by creating a climate in which higher fees on improvements developed in competition with the institute were tolerated.

## Research, Competition, and Profits

Throughout the emphasis has been on creating effective competition in research. In all probability, the more practical the results sought, the more likely that they can best be attained within the framework of private competitive enterprise. This means that the institutes would generally devote relatively little effort to what we may call "practical applied research"—the design of specific product models or the improvement of particular tools or machines. Rather, the institutes could best concentrate on encouraging basic applied research. But even in this connection reliance on competition and on a variety of approaches appears highly desirable. Take, for example, the systematic exploration of alternatives, including those that do not now seem likely to be fruitful. It is by no means necessary for an institute to undertake all such work itself. It might well induce a firm to explore an unprepossessing alternative by a combination of subsidy covering an appropriate portion of research costs and the promise of a share of the profits if the research turned out to be successful.

Obviously in making arrangements of this sort abuses are possible; bribery and graft, rather than merit, may determine the allocation of research contracts. The possibility cannot be denied, but whether its likely quantitative importance warrants concern is less clear. In fact, there is much to be said for a general effort to increase the profitability of research. It is true that fundamental research is often undertaken by dedicated men little concerned with material rewards. But practical results can undoubtedly be more rapidly and economically achieved if satisfactory solutions carry with them the prospect of appropriate profits. Attempts, however well-intentioned, to reduce the rewards derived from successful practical research seem a rather clear-cut example of killing the goose that lays the golden egg. Though the exact total is not known, the sum currently being paid for the use of patents, for example, is certainly so small that a doubling of the amount would seem a cheap price to pay if any important improvement in research performance were to result. Further, if in a particular case rewards that appeared unduly large were being received from a particular patent, an effort to limit such rewards by developing competing techniques or products seems a far more socially desirable approach than any direct effort to reduce the receipts obtained from successful research.

### Large-Scale Production versus Government Encouragement

Once again the tentative and controversial character of the discussion just concluded needs to be stressed; these are matters on which there exists no general agreement among economists. To sum up, whether practical research should be encouraged along the unorthodox lines that have been suggested depends ultimately on a comparison of one's estimate of the benefits likely to flow from increased research and more rapid development with the dangers inherent in either an expansion of large-scale production (and the accompanying risk of oligopoly) or an increase in government "interference" through the creation of productivity institutes. Actually, the benefits of more rapid development are likely to be sufficiently great to justify *both* some increase in concentration in industries now marked by small-scale operations *and* the fairly general establishment of productivity institutes—with the exact balance between the two varying from industry to industry depending on the particular prevailing circumstances. Among those who agree that some action is desirable, those anxious to avoid concentration within an industry or among its suppliers are likely to favor productivity institutes, whereas those who oppose all such "interferences" with the private economy as the institutes would represent are likely to favor the encouragement of research through concentration of production.

### Other Alternatives

It is worth stressing, in conclusion, that the present discussion has by no means exhausted all the alternative ways in which research can be encouraged. Emphasis has been placed on devices that seem likely to yield immediate results. But it may well be that techniques designed to secure an increased expenditure on research have been unduly stressed. Certainly the creation of an environment favorable to research is of immense importance; in numerous cases in the past important discoveries have been achieved by talented people with a minimum of physical facilities. Perhaps no nation has been more successful in achieving much with little than the British—as evidenced by jet engines, radar, dacron, and penicillin, to name but a few obvious examples. And there can be no doubt that the creation of physical facilities does not guarantee even successful applied research. But it is also obvious that some facilities are needed, and there is no reason why the proposed productivity institutes, for example, should not back the talented lone wolf as well as the established laboratory. And there is also no reason why they should not back research into ways and means of improving research performance, for this clearly is a subject on which additional study is urgently needed.

# 32 The Role of Innovation

## Conditions That Favor Innovation

Organizing an industry so that it performs research is no more important than organizing it so that it innovates—actually introduces commercially the invention or other improvement in technology that research has made possible. What conditions are likely to make for rapid innovation? Undoubtedly the most fundamental condition is an industry so organized that a firm that fails to innovate stands to get hurt—and get hurt seriously—because it fails to react to changed conditions. The other side of the coin is that a man who hurts his competitors—and does it for no immediately apparent reason except to make more money for himself—should at least be acceptable socially; it is even better if he is honored for his efforts. But while competitive pressures may be fundamental in bringing about rapid innovation, many other factors are involved; they range all the way from such predominantly economic matters as the organization of industry and the characteristics of competition to such broadly sociological considerations as general receptivity to change and the concept of fair play. By definition innovation involves change and therefore inevitably conflicts with our increasing desire for security, whereas competition involves struggle, and our sense of fair play dictates that the struggle should be among equals, with no large corporation bullying a smaller rival.

In this chapter attention will be concentrated on the specifically economic factors that influence the rate of innovation, especially the relationship between the organization of an industry and the rate of innovation it achieves. Let us start with two examples—one of an industry marked by rapid innovation and the other of an industry where innovation has been conspicuously slow—exploring the meaning of the term in connection with our first example. We shall then try to apply the lessons learned to the major ways in which industries are organized both in the United States and abroad.

### The Meaning of Innovation

Although an oligopoly, the American automobile industry has been marked by rapid innovation. It has also been subject, especially recently, to severe criticism. An examination of the criticism will aid in showing that in the last analysis "innovation" is as difficult a word to define as "development." In essence the criticism of the automobile industry is that (1) it caters to consumer demand, and (2) it does not cater to consumer demand. Both at present are correct. The industry, which is handicapped by the considerable length of time that must elapse between "locking up" the design of a model and its actual production, appears to have underestimated the extent of the demand for compact cars. To the extent that the demand for such cars continues on a scale sufficient *to make their production economic,* there seems little doubt that they will continue to be produced. In the nature of the case, however, the economies of mass production are inevitably accompanied by reductions in the choices that are available, as it is obviously not economic to produce in the United States a variety of small cars if the demand for each variety is limited. Hence foreign imports will undoubtedly continue and the American industry will persist in not producing exactly what every consumer wants.

The opposite criticism—that the industry caters to consumer demand—is not usually made in just these words. The industry is, however, frequently criticized for failing to provide functional transportation. But cotton stockings and flat-heel shoes are more functional clothing than the high heels and sheer nylons the public prefers; the number of car buyers who want strictly functional transportation is probably about the same as the number of women who wear cotton hose. More sophisticated is the criticism that the industry creates the bad taste to which it caters. But since World War II the industry has consistently offered an inexpensive black sedan with an economical six-cylinder engine—and the public has stayed away in droves. In fact, the company of the Big Three which during the early postwar years most consistently won the praise of consumer magazines sold fewest cars and was in danger of going bankrupt until it introduced a new line that was longer and lower and had bigger fins than any of its competitors. And even in 1958, when sales fell and criticism rose, the two lines that stood out against the trend were the Oldsmobile and the most expensive version of the Chevrolet—both loaded with more chrome than ever before.

The fact of the situation is that the automobile is today a fashion product bought with little more regard to economy or durability than a dress with whatever is at the moment called the New Look. It is frequently argued that styles are deliberately changed to render obsolete the consumer's existing inventory of goods and therefore increase the purchases he has to make. But style changes are expensive for the automobile industry; the industry's profits in all probability would have been higher if model changes had been slower. In any event, just as a woman is likely to buy a dress sufficiently different so that her friends will know it is new, so car buyers have consistently preferred models noticeably different from those already on the road. Admittedly this may be conspicuous consumption, but, then, being social animals, do we ever act without considering the impact on others of what we do? In short, one may dislike much of what passes for taste in America and still believe in the desirability of allowing American industry to cater to our collective idiosyncrasies!

Even if catering to consumer demand is accepted as proper, the question remains as to the extent to which meeting its vagaries constitutes innovation. To what extent was the sack dress or the New Look an innovation? Confining innovation to "functional improvements" does not help. What is the "function" of a dress—to provide warmth and meet the requirements of modesty, or to attract men? In essence this is the same problem discussed in Chapter 27 in connection with the meaning of "economic development." There seems little need to repeat that discussion. Instead, let us tie the two matters together by defining "innovation" as the *making of changes that contribute to economic development.* This means that a style change, to the extent at least that it adds to the economic value of a product, is a type of innovation. But we made very clear in Chapter 27 that economic development did not necessarily imply "improvement" in any more general sense of the term. In the same way not all innovation is necessarily for the "better" in any overall sense.

## The Performance of the Automobile Industry

In the light of this discussion, what is the record of the American automobile industry in regard to innovation? Clearly it has been sufficiently rapid to bring about drastic changes in consumer preferences among producers. Further, there can be no doubt that the industry is organized so that firms can get hurt—and get hurt seriously—as the behavior of earnings in Table 32-1 demonstrates. From 1948 to 1955 two

### TABLE 32-1

### Indices of Automobile Profits per Share

(1948–1950 equals 100)

| Date | American Motors | Chrysler | Ford | General Motors | Studebaker-Packard |
|---|---|---|---|---|---|
| 1948 | 80 | 77 | 54 | 68 | 162 |
| 1949 | 105 | 114 | 99 | 102 | 83 |
| 1950 | 115 | 110 | 146 | 131 | 55 |
| 1951 | 65 | 62 | 71 | 79 | 60 |
| 1952 | 50 | 68 | 66 | 87 | 62 |
| 1953 | 56 | 64 | 93 | 94 | 60 |
| 1954 | ᵈ 34 | 16 | 128 | 127 | ᵈ 130 |
| 1955 | ᵈ 21 | 86 | 243 | 180 | ᵈ 153 |
| 1956 | ᵈ 93 | 17 | 130 | 126 | ᵈ 215 |
| 1957 | ᵈ 33 | 103 | 154 | 125 | ᵈ 55 |
| 1958 | 85 | ᵈ 29 | 52 | 93 | ᵈ 66 |
| 1959 | 185 | ᵈ 5 | 244 | 128 | 139 |
| 1960 | 146 | 27 | 231 | 140 | 3 |

ᵈ Denotes deficit.

firms went from comfortable profits to losses that made their future uncertain, and Chrysler's average earnings declined significantly. But in 1955 earnings of General Motors were 80 percent and Ford's were 143 percent higher than they had been in 1948–1950. Up to 1955 all producers except the two leaders had been hurt in various degrees. But many improvements the average consumer—rightly or wrongly—wanted were achieved. Cars were made longer, lower, and roomier; engines were completely redesigned and made more powerful; performance and roadability were much improved; automatic transmissions became practically universal; and many new features, such as power brakes and power steering, were made available. In addition, manufacturing techniques were steadily improved and manufacturing capacity was greatly increased.

That the changes up to 1955 were what the consumer wanted seems demonstrated by the fact that the share of "middle-price" cars expanded steadily at the expense of "low-price" cars while the former were significantly longer, roomier, more powerful, and offered a greater choice of gadgets. It was the projection of a continuance of this trend that caused Ford to introduce the Edsel. But there is a limit to the increase in size and power that consumers want, and the share of the "middle-price" group fell in the late fifties because by 1960 a Ford was not only nine inches longer than a 1955 Oldsmobile but also offered practically every gadget available on more expensive cars. Had only the

Big Three been in production, it is not clear how rapidly they would have reacted to the changed situation. But the combined impact of American Motors, Studebaker-Packard, and foreign imports forced the general introduction of compact cars. One result was that, because the company reacted most rapidly, earnings of American Motors in 1959 were higher than ever before and Studebaker-Packard's were higher than in a decade—and at a time when Chrysler was in the red and General Motors had no better than average earnings. Only Ford managed an increase—in part because its 1959 model was a holdover and therefore less extreme. In short, it seems clear that the industry, even though it was highly oligopolistic, was innovating relatively rapidly.

Another way of getting at the factors promoting innovation is to examine the extent to which there is open or tacit market sharing in an industry. Each firm in the automobile industry appears dedicated to the proposition that it is permanently entitled to the highest percentage of the total market it has ever achieved in the past and is prepared to do almost anything—short of cutting prices—to gain the share of the market to which it feels entitled. So long as an adequate number of firms fail to achieve their objective permanently—so that oligopoly is not reduced to duopoly or monopoly—an industry so organized appears likely to achieve rapid innovation. If, as has been suggested, the best of all monopoly benefits is a quiet life, the automobile industry is clearly not monopolistic!

## An Example of Slow Innovation

On the other hand, the worst possible way to organize an industry from the point of view of innovation is to permit rigid market sharing and price fixing. Neither is typically permitted under the Sherman Act, though price fixing is, of course, allowed under fair-trade laws and required under mandatory fair trade. Hence the best available example is probably the British coal industry after the Coal Mines Act of 1930, which authorized the setting of fixed quotas and minimum prices for each company. (Lest we feel smug, recall that the American coal industry sought exactly the same solution through the Bituminous Coal Act of 1937; the only difference is that our act, under the impact of the war-induced expansion of demand, was allowed to expire in 1943.) Of the two, price fixing at the manufacturing level is likely to be relatively unimportant if changes in the product are possible. Market sharing, however, has a devastating effect on innovation because it greatly reduces the rewards that innovation can be expected to achieve. Indeed, rewards for product improvements—except to the extent that the improvement of one firm's product expands the demand for the industry as a whole—are completely eliminated.

Moreover, improvements in techniques of production are undoubtedly most easily made in connection with expansions of capacity; many small changes not worth making in an existing plant can make an appreciable difference when a new plant is established or a new mine opened. Thus where an industry as a whole is expanding, innovation is likely to be relatively rapid. But where firms can expand at the expense of their less efficient rivals, innovation may also be rapid even if total output is not growing or is growing only slowly. It is not, of course, essential for a firm to succeed in expanding at the expense of its rivals. If, as is frequently the case, the rivals feel they have no alternative but to undertake retaliatory investment, then the final result is likely to be that inefficient plant is retired far more rapidly than it otherwise would have been even if relative market shares are in fact unchanged.

Expansion of production is not always necessary. Profits will be increased if costs are reduced even with output unchanged. But, in contrast to the case in which the firm expects, or at least hopes, to use both new machinery and old, with unchanged output old machinery will inevitably have to be scrapped. Moreover, as capital costs are in most cases a relatively small part of total costs, significant cost savings with unchanged output usually mean that labor will be released without even the hope that it can be reabsorbed by an expansion of sales. Further, labor in the typical situation probably has more control over changes in existing job categories in an existing plant than it has when new techniques are established in a new plant. Thus, although the role of labor in connection with innovation will be more fully examined in Chapter 35, workers, in general, can be expected to oppose strongly changes that lead to the inevitable displacement of labor—perhaps to the point at which management is significantly deterred from attempting to innovate.

In short, when a firm is prohibited from expanding at the expense of its competitors—which means hurting other firms by taking away their market and perhaps ultimately driving them out of business—much of the incentive to innovate will have been lost. Why under such circumstances should a firm try to develop a better mousetrap or risk a strike by its labor force in order to reduce costs if nothing it can do will enable it to increase its sales faster than those of the industry as a whole? In the case of British coal the result of market sharing was that little coal was undercut up to World War II (when expanding output and shrinking labor supply forced some improvement), productivity was significantly lower than in both the United States and Germany (partly but not wholly because of the inferior seams worked in Great Britain), and there came to be general agreement by both the Labour and Conservative parties that the coal industry should be nationalized as rapidly as possible.

## Innovation under Competition

With these examples of rapid and slow innovation in mind, let us explore the relationship between different types of industrial organization and the rate of innovation. We may start with highly competitive, small-scale industry approximating perfect competition, such as exists in agriculture. Whatever its merits from the point of view of resource allocation, it is not a form of organization that necessarily promotes rapid innovation. It is often hard to get the entrepreneur involved to utilize the results of research—which means that a farmer, dead tired from a day's work, finds it hard to read up on the latest developments in contour plowing. As a result, reliance on market pressures alone has not been deemed sufficient in agriculture; instead, to ensure a satisfactory rate of innovation, around $75 million annually is spent on an elaborate system of bulletins, county agents, and demonstration farms—developed by the extension service of the Department of Agriculture in conjunction with state experiment stations.[1]

In addition to having difficulty in learning of innovations, firms operating on a small scale may also be unable to finance desirable changes, especially if increases in the scale of production are involved. Thus far this has not been a serious problem in agriculture. The efficient scale of production has remained small, though there is some evidence that increasing mechanization may in the future enlarge the efficient farm to the point at which the sums needed for financing will become difficult for an individual to raise. But outside agriculture, when substantial expansions in the scale of production have become desirable, financial difficulties have frequently retarded innovation if the industry is composed of a large number of small firms. Even when they are organized as corporations—which avoid the special difficulties associated with the unlimited liability of proprietorships—it is not easy for small firms to attract capital. For, no matter how optimistic he may have been regarding the automobile industry, it was not easy at the start for an investor to choose General Motors or Ford among the thousands of firms that at one time or another made cars in the United States. Admittedly the rewards of those who picked the successful companies were high and the desire to take a long chance may have offset, to some extent at least, the conservative attraction of more oligopolistic areas where the certainty of participation was likely to more than offset a lower anticipated rate of growth. Although this is not a matter on which a great deal is known, the extent to which small firms have had in the past to grow predominantly out of their own resources makes it probable that on balance financial difficulties have significantly slowed down innovation in areas where small-scale firms predominated.

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[1] Theodore W. Schultz, *The Economic Organization of Agriculture* (New York: McGraw-Hill Book Company, 1953), p. 119.

The situation in this regard has undoubtedly become appreciably more difficult in recent years under the impact of higher corporate taxation and the efforts of the Securities and Exchange Commission (SEC) to eliminate the flotation of securities by means of fraudulent or misleading information. Lower tax rates for "small" corporations help, but major differences in rates would encourage the proliferation of subsidiaries designed entirely to make use of the tax advantage. Hence only limited relief by differences in tax rates appears administratively feasible so long as substantial revenue is to be obtained from corporate taxation. In the case of the SEC the problem is that the cost of arranging to underwrite a new security issue—costs such as investigating the company, checking the legality of the issue, and printing the prospectus required by the SEC, which must be incurred before new securities can be sold—is often little different for an issue of $1 million or $10 million, so that the percentage of the funds taken by underwriting costs increases rapidly as the size of the issue decreases. On the other hand, in recent years there has been a considerable movement toward "diversification" on the part of large businesses, probably not so much to increase total profits (there being no reason to believe that the new areas will on the average be more profitable than the old) as to promote a more peaceful life by eliminating the headaches that arise when profits fluctuate as a result of changes in business conditions in a particular area of the economy. This development has been much aided by the same tax laws that retard the growth of small firms. For an existing business may offset its mistakes in one field against the income earned elsewhere—and this very fact makes it attractive to conservative investors. Thus although they may have had little *overall* effect in retarding innovation, the tax laws and the SEC—however justified they may be on other grounds—certainly have made innovation more difficult in industries organized on a small-scale, competitive basis.

In short, problems involving the quality of available entrepreneurship and difficulties in financing expansion may well retard innovation to a significant extent in a competitive industry marked by small-scale firms. The difficulties can, however, easily be exaggerated; so long as there are no restrictions on price competition or on entry into the industry, the retardation of innovation is likely to be relatively minor.

### Innovation under Restricted Competition

When we examined restrictions on competition, and especially on price competition, in Chapter 13, we were mainly interested in the effect of restrictions on the economizing process, and particularly on the extent to which they caused a waste of productive factors. But the estimates of waste then offered—3 to 5 percent in the short run and 5 to 10 percent over a longer period—included an allowance for the effect of restrictions in retarding innovation, as when mandatory fair trade prevents the introduction of supermarkets in liquor retailing. The present discussion—especially in regard to the impact of restrictions on price competition—can therefore be quite brief.

Other sorts of restrictions are, of course, possible. The most extreme situation—such as prevailed in British coal mining—exists where prices are fixed, entry is limited, and rigid quotas are established for each producer. With the exception of certain aspects of the farm program, formal quotas have not played much of a role in the American economy; in fact, formal restrictions on entry have also not been particularly important, though they are involved in such things as oil proration and taxicab or liquor licenses.

Actually, a major reason for restrictions on competition—and an important practical limitation on a high degree of competition as a way of organizing an industry—is that people tend to feel sorry for the firms involved just because they are small. Thus taxicabs in New York City are one of the clearest available examples of a technical monopoly: not only are fares rigidly controlled, but the number of hack licenses issued by the Police Department has not changed recently, so that entry is possible only by buying an existing license. Further, it is possible to estimate with a high degree of accuracy the capitalized value of the monopoly profit resulting from possession of a hack license by subtracting from the total price paid for a cab with a hack license the readily ascertainable value of the cab alone. The value of a license determined in this way is currently about $15,000, which in turn means that for this reason alone hundreds of dollars more each year must be paid for the use of cabs than would be the case if entry were free. All the same, only the most devoted advocate of laissez faire is likely to argue that it should be free in the light of the hours and earnings of cab drivers. In short, it is sympathy for the poor proprietor that is basically responsible for such diverse matters as fair trade and the farm program. And, as the description of Switzerland in Chapter 13 made clear, restrictions are often much more widespread in other countries.

It is easy to sympathize with the objectives of those who want to reduce competition. The thought of a man losing his life savings by being forced out of a long-established business—especially if his rival is a well-heeled corporation—is repugnant to our sense of fair play. But when, as a result, we restrict competition, we make innovation more difficult to achieve. In view of the rapidity with which small differences in rates of economic development lead to large differences in results—as set forth, for example, in Table 31-1—there is little doubt that by far the most devastating effect of restrictions on competition in general, and on price competition in particular, is to slow down innovation, and therefore economic development.

### Oligopolies, Cartels, and Nationalized Industry

Do oligopolies innovate rapidly? Our example of rapid innovation is drawn from such an area. Quality of management, ease of financing, and the character of our tax laws all combine to make innovation easy for oligopolies. Further, the firms that are hurt by the innovation of a rival are so large that they do not command public sympathy. Hence it seems clear that oligopolies *can* innovate easily and rapidly. *Will* they? In terms of the automobile industry, the crux of the problem can be put very simply: Will Henry Ford continue to wish to increase his share of the market and outsell Chevrolet or will he be content with his share and anxious to enjoy a quiet life?

It appears that *in general* American oligopolies not only attempt to increase their share of their present markets but also are willing to expand into any related field that appears likely to be profitable. The importance of the second of these two points should be recognized. A market-sharing agreement among existing producers will achieve little if the increased profit margins that result from the agreement immediately attract new firms into the industry. This impression of the behavior of American oligopolies should be labeled as tentative. Undoubtedly there are many individual cases in which market sharing occurs, and many oligopolistic areas where more rapid innovation would be desirable. But, with all these qualifications in mind, innovation under oligopoly presently appears at the very least to be no less satisfactory than elsewhere and in all probability somewhat more rapid on an overall basis.

The best guarantee that this situation will continue—and the unique aspect of American oligopolies—is that they operate under the Sherman

Act. Any arrangement for sharing markets is, under the act, a criminal offense. The result is that, if share they must, American businessmen have either to risk being sent to prison or to rely on "gentlemen's agreements," which are notoriously unreliable.

We can have a look at the other side of the coin by considering some of the factors that have retarded the development of British industry. The interpretation here presented is probably both controversial and incomplete: it is controversial in the sense that it may be unduly critical of the performance of British industry, and it is incomplete in the sense that it presents some overall generalizations that obviously do not apply in every individual case. But the organization of British industry appears to be of major importance in explaining why over the last eighty-five years British real income per hour of work has increased only about half as fast as comparable income in the United States. In Britain market-sharing arrangements not only are widespread but have only recently been subject to condemnation. In my judgment they have significantly contributed to retarding innovation in British industry, for such schemes have frequently produced results similar to those just described in the case of coal.

An example is the treatment of the British Oxygen Company. After it had been investigated by the British Monopolies Commission, found to supply 98.5 percent of the oxygen and dissolved acetylene sold in the United Kingdom, and judged to be operating against the public interest, it nonetheless was allowed to continue—with its prices and profits unregulated—after promising to engage in research, to offer its products on a nondiscriminatory basis, and to refrain from taking over the remaining 1.5 percent of the industry! The comment of the London *Economist* summarizes the problem: "British anti-monopoly legislation makes no provision for the breaking up of any company into competing units. . . . But without some such power to restore competition, rather than chain monopolies by the leg, it might be as well to disband the reconstructed Monopolies Commission."[2] The contrast between the treatment of the British Oxygen Company and the Aluminum Company of America, which was not allowed at the end of the war to acquire any government-built aluminum capacity but, rather, was forced under threat of antitrust action to license its patents to two competitors, provides a measure of the difference in British and American attitudes toward monopoly.

Or consider the British match market, which historically has been split among six firms. Not only were rigid quotas fixed, but firms that exceeded their quotas agreed to pay an amount, estimated to equal their profits on the additional output, to those whose sales fell behind. Such agreements are not illegal in Britain, although they cannot be enforced legally and, starting in 1957, have had to be registered publicly and may thereafter be subject to condemnation. Although an investigation of the match industry was begun in 1949 and a report condemning the industry's agreements was issued in 1953, as yet no important changes in the organization of the industry have been brought about.

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[2] January 5, 1957.

Particularly where there is excess capacity, either cartelization or nationalization may well be a better way of organizing an industry than to preserve the appearance of competition and allow market sharing. Cartels take many forms, but probably the most important type involves a common sales agency and an agreed sharing of profits, with production allocated to the plant best qualified to handle it. If all plants had previously been working at, say, 50 percent of capacity, the advantage of closing down half the plants and working half at 100 percent is too obvious to need elaboration even when the costs of each plant are identical. It is just this, of course, that market sharing prevents. Further, in any practical situation the plants of different firms are likely to have different costs and to be working at different percentages of capacity. But even where all firms are working at full capacity and have uniform costs, it is still true, in general, that further expansion can be most economically achieved by modernizing and expanding particular existing plants or opening up entirely new plants. This is what a cartel or a nationalized industry can do. It is, in fact, exactly what was done by the German coal cartel during the interwar period, so that productivity in Germany increased significantly. And it has also been what the coal industry in Britain has tried to do since nationalization in 1946. In short, where the allocation of production is centrally controlled, it can be undertaken by the plant with the lowest cost, and new, heavily mechanized plants can be established with the assurance that their expensive machinery will never be idle because decreases in demand can be concentrated on older, less efficient plants.

This is one of the reasons why socialists believe nationalization superior to competition; they contend that allocation of output to the best qualified plant will both reduce current costs and, of most immediate concern, make for more rapid innovation and development. This may well be correct if the alternative involves any important amount of market sharing. But what of the typical American oligopoly? How is output allocated under such conditions to the most efficient plant? The answer is, of course, that it is not done centrally but by the firm with lower production costs driving its competitors out of business and in this way allocating to itself the sales that were previously theirs. This is, if you will, a ruthless process which, if you oppose it, should be referred to as "the law of the jungle." However described, the point is that it works well. For, when its very survival may depend on remaining fit, no firm can allow either its product line to fall much behind or its production costs to rise much above those of its competitors. On the other hand, the various "productivity teams" that have examined British industry since the war have consistently reported that, although the best British technology is unexcelled, the worst is very poor, the range great, and the average inferior. The reason is, predominantly, that market sharing in Britain has been so widespread that superior firms have neither driven the inferior firms out of the industry nor forced them to modernize. Undoubtedly the competitive process can involve some wastage of the capital of the displaced firms, but overall it appears to result in greater pressure and therefore more rapid innovation than is likely under any alternative arrangement.

### Innovation by Public Utilities

This conclusion can be confirmed by considering the rate of innovation typically achieved by public utilities—which have the same ability to allocate output to the most efficient plant as is possessed by a cartel or a nationalized industry. In general, the record, although not particularly bad, is also not particularly good. Take, for example, the American Telephone and Telegraph Company. We have seen that its research record has been first-rate, but as an innovator it has not been outstanding.[3] On more than one occasion it has held up the introduction of technically possible improvements until products embodying them were developed by Western Electric, its manufacturing subsidiary. Obviously in the long run its sales and earnings depend on its basic efficiency—if only because it is competing for the consumer's limited spending. But, equally obviously, it stands to lose very little if it holds up an innovation for a year or two; no competitor will take away its market. As a result its life has been quiet; the dividends paid, for example, remained unchanged at $3 a present share from 1922 to 1958. And, while profits in the automobile industry varied in the way summarized in Table 32-1, those of A T & T increased slowly but steadily from $3.28 to $5.53 per present share.

Broadly the same is true of other regulated utilities, with variations depending on the closeness of competitive alternatives. When the Tennessee Valley Authority started, rates in the Tennessee Valley were high and current usage was low; within a decade private rates there had been greatly reduced and overall usage was the second highest in the United

[3] John Sheahan, *Quarterly Journal of Economics*, May, 1956.

States. Time and again the same sort of result has followed the appearance in any area of the Rural Electrification Administration. Moreover, the real revolution that has taken place in rail transport—which in exactly one decade (1944–1954) raised the gross ton-miles of freight trains powered by diesel locomotives from 4 to 84 percent—has been vastly expedited because truck, pipeline, private car, and airplane have turned what was once a monopoly into a very competitive business.

### Competition and Innovation

As was true of practical research, there appears to be no substitute for real and effective competition if rapid innovation is to be achieved. But the form taken by such competition may be quite different from the "perfect competition" of many small-scale firms that can be shown to be "ideal"—within the assumptions of the analysis—in connection with resource allocation. In fact, we have suggested that innovation is likely to be most rapid under what may be called "competitive oligopoly"—where the scale of production is large but each firm, nonetheless, makes vigorous efforts to increase its share of the market. On the other hand, innovation in highly competitive areas with small-scale production may be fairly rapid provided that entry is free and prices are uncontrolled; but even under such conditions difficulties in learning about research results and obtaining necessary financing may retard innovation. As a result it is hard to determine whether a highly competitive industry is likely to innovate more rapidly than a regulated utility, cartel, or nationalized industry. In each of the three last-named cases competitive pressures are obviously reduced, but information and financing are likely to be readily available, so that no general choice among the alternatives appears possible. But it does appear possible to suggest that the greater the extent of restrictions on price competition and, particularly, the greater the amount of market sharing in any industry, the slower is likely to be its rate of innovation—even though the industry may give the appearance of being "competitive" by being organized into a large number of small firms.

# 33 | The Role of Saving

## Saving and Capital Formation

In connection with our discussion of income distribution, the general case for rewarding capital by the payment of interest was considered in Chapter 17, while Chapter 18 discussed the actual share of the national income that capital has received in recent years and the benefits that redistribution of that share might bring. We were, in short, concerned primarily with the compensation of capital after it had been created. In this chapter, in contrast, because we are basically interested in the contribution of saving and capital formation to economic development, we shall be primarily concerned with the process by which saving leads to the creation of additional capital. Recall that we are using "saving" to mean spending on investment rather than on consumption. Hence in any year saving is equal to investment, and both are in turn equal to capital formation, which is simply an alternative term for investment. Keep in mind that all three concepts may be either gross or net, the difference between them being depreciation allowances. Only when there is net saving will there be an *addition* to capital during any period. But investment in a particular area of the economy may occur—even if there is no net addition to total capital—if an equal amount of existing capital is not replaced in some other area. Hence both gross and net saving have a contribution to make to our understanding of the process of capital formation.

## Sources and Uses of Saving

Let us start with a statistical summary, presented in Table 33-1, of the sources and uses of saving in the United States in selected recent years. Some general words of warning appear in order. First, although the data are given in hundred millions (and even millions in the original source), they are in fact *estimates* subject to a sizable margin of error.

### TABLE 33-1

### Sources and Uses of Saving in the United States

(In billions)

| | 1929 | 1933 | 1939 | 1946 | 1950 | 1955 | 1960 |
|---|---|---|---|---|---|---|---|
| Sources | | | | | | | |
| Personal saving [a] | 4.2 | −0.6 | 2.9 | 13.5 | 12.6 | 17.5 | 22.9 |
| Corporate saving [b] | 2.9 | −4.6 | 0.5 | 2.4 | 8.6 | 10.1 | 8.6 |
| Net saving | 7.1 | −5.2 | 3.4 | 15.9 | 21.2 | 27.6 | 31.5 |
| Uses | | | | | | | |
| Net private domestic investment [c] | 7.6 | −5.8 | 1.5 | 17.4 | 30.9 | 31.9 | 29.3 |
| Net foreign investment [d] | 0.8 | 0.2 | 0.9 | 4.6 | −2.2 | −0.4 | 1.5 |
| Government deficit [e] | −1.0 | 1.4 | 2.1 | −4.1 | −8.2 | −2.9 | −1.9 |
| Statistical discrepancy [f] | −0.3 | −1.0 | −1.1 | −2.0 | 0.7 | −1.0 | 2.6 |
| Net uses | 7.1 | −5.2 | 3.4 | 15.9 | 21.2 | 27.6 | 31.5 |
| National income | 87.8 | 40.2 | 72.8 | 180.9 | 241.9 | 330.2 | 417.1 |
| Net saving and uses as percentage of National Income | 8.1 | — | 4.7 | 8.8 | 8.8 | 8.4 | 7.6 |
| Depreciation [g] | 8.6 | 7.2 | 7.8 | 10.7 | 19.1 | 32.0 | 43.1 |
| Gross saving and uses | 15.7 | 2.0 | 11.2 | 26.6 | 40.3 | 59.6 | 74.6 |
| Gross National Product | 104.4 | 56.0 | 91.1 | 210.7 | 284.6 | 397.5 | 504.4 |
| Gross saving and uses as percentage of Gross National Product | 15.0 | 3.6 | 12.3 | 12.6 | 14.2 | 15.0 | 14.8 |

[a] Line 2. [b] Lines 3, 4, and 8. [c] Line 13 less lines 5, 6, and 7. [d] Line 14. [e] Line 9. [f] Line 15. [g] Lines 5, 6, and 7.

SOURCE: *Survey of Current Business,* July, 1958, Table 5 for estimates through 1955. References are to the numbered lines of Table 5. Estimate for 1960 from the *Survey of Current Business,* July, 1961, Table 34, adjusted in the same way as the other estimates.

Some indication of the margin involved is given by the behavior of the "statistical discrepancy." This discrepancy exists because investment and saving are estimated from different data. Theoretically, as just noted, the results ought to be exactly the same, but because of unexplained errors they actually diverge by the amount of the discrepancy. Second, the "sources" and "uses" categories are somewhat arbitrary, especially where an item can swing from positive to negative. Thus it would be just as sensible to put "government surplus" (the opposite of "government deficit") on the "sources" side (with, of course, the sign changed) as it is to place "government deficit" among the "uses." Finally, particular "sources" cannot be joined with particular "uses" with any certainty. All we can say is that the totals must be equal—just as in the case of a pond with several inlets and outlets, we cannot say which inlet feeds which outlet but do know that the total inflow must equal the total outflow if the level does not change.

With these warnings in mind let us examine the estimates for 1960. In that year "personal saving" was $23 billion. This was the amount saved by individuals, including those operating unincorporated businesses, in such widely varying forms as deposits in savings banks, contributions to pension funds, mortgage repayments, savings accumulated under life insurance contracts, direct purchase of stocks and bonds, or even, in the case of unincorporated businesses, outright purchases of buildings and machinery. In that same year corporations saved by retaining $8.5 billion of their aftertax profits, so that sources on this basis totaled $31.5 billion. The surpluses of all governmental units made available a further $2 billion, while the statistical discrepancy "absorbed" $2.5 billion, so that the net amount available in that year was $31 billion. This made possible net private domestic investment of $29.5 billion and net foreign investment of $1.5 billion.

Perhaps the most important thing about Table 33-1 is that it makes clear that the sources of saving are complex. Even personal saving is itself complicated, summarizing the actions of many individuals often undertaken for quite different motives; yet it is only one among several sources of saving. In 1950, for example, such saving provided funds equal to little more than 40 percent of net private domestic investment; but in 1960 the amount provided had risen to almost 80 percent. Corporate savings and government surpluses are the main other sources of saving. Some indication of their importance in the past, as well as a breakdown of personal saving, is provided by Table 33-2.

It is obvious that, as a source of saving, retained earnings of corporations have a long history. But government, too, has often made a

TABLE 33-2

Distribution of Net Saving among Saver Groups

(Percentage shares)

| Period | Farmers | Other Individuals | Unincorp. Business | Total Personal | Corporations | Government [a] |
|---|---|---|---|---|---|---|
| 1897–1906 | 1.3 | 61.2 | 5.8 | 68.3 | 25.1 | 6.6 |
| 1907–1916 | −5.8 | 70.0 | 3.6 | 67.8 | 23.9 | 8.3 |
| 1920–1929 | −2.1 | 62.8 | 3.4 | 64.1 | 20.4 | 15.5 |
| 1946–1949 | 7.2 | 51.8 | 1.4 | 60.4 | 25.3 | 14.3 |

[a] Includes nonprofit corporations.

SOURCE: Simon Kuznets, in *Capital Formation and Economic Growth* (New York: National Bureau of Economic Research, 1955), Table III.

contribution, though the last two periods, both of which followed major wars, are somewhat abnormal, representing the maximum rather than the average contribution that government has made in the past.

## The Importance of Saving

Why should we concern ourselves with saving? In no year for which information is presented in Table 33-1 did net saving amount to as much as 10 percent of the national income; in no year did gross saving amount to more than 15 percent of the gross national product. Why therefore is the matter of major importance? The answer is that the rate of saving is intimately related to the rate of economic development. Without net saving, improvements in technology can be introduced only as capital is replaced at the end of its useful life. In theory this would not rule out substantial development; if when a machine is replaced, the new machine, paid for by the depreciation allowances that have been set aside, is twice as productive as the one worn out, productivity will have doubled even without net saving. But this is true only for areas where replacement is undertaken regularly, and it is not always true even for such areas.

To start with, assets of government and of consumers are rarely replaced systematically. Although consumer durables are not usually considered a part of capital formation, our stock of housing clearly is; and almost no house owner sets aside, for example, 2.5 percent of the purchase price of his house each year so that at the end of forty years he can retire his old house and buy a new one. Thus in nonbusiness areas relatively automatic replacement in connection with depreciation allowances cannot be counted upon to bring about improvements in our capital stock. Second, as already mentioned, depreciation allowances are based on the original cost of the capital equipment at issue. Hence, even in business areas where depreciation allowances are systematically set aside, the full benefits of improvements will be obtained only if prices have not risen over the life of the machine in question. For example, if a machine cost $1,000 when it was new twenty years ago and now costs $2,000 to replace, then in the absence of improvements mere maintenance of capital will require $1,000 of net saving. In periods of major price change such as took place after 1939, this means that businessmen have to save large amounts merely to maintain their capital intact. Of course, if the $2,000 machine were twice as productive as the original $1,000 machine, then the business would have been able to maintain its capacity without net saving, but the increase in productivity that would otherwise have taken place would have been eliminated. In short, whenever prices rise, the rise tends to offset the development that would otherwise result from the normal replacement of worn-out machines by new and improved models; where prices rise as fast as (or faster than) the average improvement in productivity, development will occur only if there is net saving even in the business area where depreciation allowances are systematically set aside.

These have been specific reasons why economic development requires net saving. In more general terms, both additional capital and improvements in technology tend to offset the utilization of wasting resources and render man's labor more productive. Between 1875 and 1950 capital per person roughly tripled. As a result not only has the reward per unit of capital relative to the reward per unit of labor declined significantly; in recent years there also appears to have been a tendency toward a decline in the share of the national income going to capital as it became relatively more plentiful. Many economists, but especially Keynes, have projected this trend into the future and have suggested that a time may come when capital will be so plentiful as to have no scarcity value, which would lead, as Keynes put it, to the "euthanasia of the rentier." The prediction is, of course, the exact opposite of the picture Marx foresaw of an ever-increasing share of income going to capitalists until revolution became inevitable. Any prediction that capital will lose its scarcity value assumes a slowing down, if not an elimination, of improvements in technology. For it is the opportunities for the employment of capital made possible by improved technology that have prevented the threefold increase in capital per person from resulting in an even greater decline in the return that capital has received. In fact, had not net saving been large since 1875, the share of the national income going to capital might quite possibly have risen—at least in the absence of public action to prevent such a rise. Thus, in periods when improvements in technology are rapid, appreciable net saving may be essential if an increase in the share of income going to capital is not to occur.

### Saving and Economic Development

The importance of capital in connection with economic development can, however, be overestimated. Because economics has a fairly well-developed capital theory and almost no systematic theory regarding the factors responsible for development, capital frequently receives more attention than it deserves. Recall that the estimates of Abramovitz presented in Chapter 29 suggest that the threefold increase in capital per person that took place between 1875 and 1950 might *by itself* have brought about an increase in production per person of 14 to 44 percent, depending on the way in which the importance of capital is measured. Whichever figure is used, in view of the fact that production per person increased 300 percent, it is clear that other factors have been far more important than capital.

It is also true that the higher the level of saving and depreciation, the smaller the importance of capital. In developed economies the value of reproducible capital appears to be roughly three times the national income, giving a capital-output ratio of 3 to 1. If saving were to reach 25 percent of income—which we shall see it appears to have in the Soviet Union—then the economy would double its capital in twelve years, and capital would be relatively plentiful. On the other hand, if saving is no higher than 5 percent of income—which we shall see is normal for an underdeveloped area—then the economy would require sixty years to double its capital, and capital would be relatively scarce. Again the United States, with net saving of less than 10 percent, would probably be relatively short of capital if it were not for the fact that since 1946, depreciation has increased from 40 to over 55 percent of gross capital formation. Hence where saving and depreciation are at relatively high levels, capital is likely to be relatively plentiful—and relatively unimportant in its influence on economic development. But, although its role may be exaggerated, net saving clearly is of importance in connection with development, especially in developing countries where depreciation allowances are small because there is as yet little to depreciate. Moreover, even in developed areas, it remains true that the more rapid the development desired, the more important net saving becomes and the less can depreciation allowances alone be depended upon.

## The Behavior of Saving

When budget studies are made of the way in which people spend their income, we find that, beyond a point below which people do not save (or actually dissave by drawing on their assets), on the average in any year the rich save a higher percentage of their income than the poor. In addition, from one year to the next, the overall percentage saved tends to increase with increases in national income. When students were searching for an explanation of the severity and duration of the Great Depression, it seemed logical to suggest that nations, like people, might save more as they got richer. Then if investment opportunities were to decrease for reasons such as the end of the frontier or a slowing down in the rate at which technology improved, saving might tend to be more or less permanently in excess of investment opportunities and the economy subject to "secular (long-term) stagnation."

But when one looks at what has actually occurred, it appears from Table 33-3 that saving, if anything, has declined rather than increased.

TABLE 33-3

The Importance of Saving

| Decade | Domestic Gross Saving as Percentage of GNP | Domestic Net Saving as Percentage of NNP | Depreciation as Percentage of Gross Saving |
|---|---|---|---|
| 1869–1878 | 21.7 | 13.9 | 42.8 |
| 1879–1888 | 21.0 | 13.8 | 39.7 |
| 1889–1898 | 22.9 | 14.6 | 43.0 |
| 1899–1908 | 21.5 | 12.8 | 46.5 |
| 1909–1918 | 19.4 | 10.7 | 50.1 |
| 1919–1929 | 20.6 | 8.8 | 62.4 |
| 1929–1938 | 14.8 | 2.3 | 86.7 |
| 1939–1948 | 28.5 | 11.4 | 67.8 |
| | | | |
| 1869–1908 | 21.8 | 13.8 | 43.0 |
| 1909–1948 | 20.8 | 8.3 | 66.8 |

SOURCE: Simon Kuznets, *op. cit.*, Table I-3.

Results in recent years reflect the Great Depression—when income and saving were unusually low—and two world wars—when saving was unusually high—so that comparisons between the start and the end of the entire period are not easy to interpret. But even in the prosperous twenties net saving was lower than, and gross saving almost as low as, in any previous decade, so that at the very least it is hard to argue that the expected increase has taken place. In fact, if one leaves out the decade of the thirties and allows for the fact that gross saving was high relative to net saving during World War II as a result of the fact that "accelerated depreciation" of war plants was permitted, perhaps the most significant thing that emerges is the stability of the long-term ratios.

How can this long-run stability be reconciled with the previously noted tendency of people to save more as their income rises? The answer appears to be that over time there is a "secular shift" upward in our willingness to consume. What this means is that a man with a $2,000 income in 1875 undoubtedly saved a significant amount—perhaps as much percentagewise as a man with an $8,000 income today—whereas a man with a $2,000 income today saves little or nothing. Clearly this is what must have happened or the percentage saved for the economy as a whole would have risen steadily.

### Comparative Rates of Saving

What we are particularly concerned with in this chapter is the relationship between saving and the rate of economic development. We know that American economic development has been relatively rapid. Has our rate of saving been higher than that of other countries? At first sight this does not appear to be the case. A recent study found that our ratio of gross saving to gross national product was exceeded in recent years by 13 of the 25 countries for which information was available, while our ratio of net saving to net national product was exceeded by 10 of 16 countries.[1] But many of the countries with high ratios in recent years were repairing the dislocations and damage caused by World War II. If we look at a longer period, our rate of saving has been significantly higher than that of the two major European countries—Great Britain and France—for which long-term information is available. The estimates, summarized in Table 33-4, will repay careful study.

The difference between total investment (which of course equals total saving) and domestic investment represents foreign investment. If we compare the three countries period by period, we find that from roughly the Civil War to World War I, when real income in the United States increased appreciably more rapidly than in Great Britain or France, our rate of investment was significantly higher. This is particularly true of domestic net investment, which in our case slightly ex-

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[1] Simon Kuznets, in *Capital Formation and Economic Growth* (New York: National Bureau of Economic Research, 1955), Table I-1.

### TABLE 33-4

Comparisons of Investment Rates

| Period | Total Gross Investment as Percentage of GNP | Domestic Gross Investment as Percentage of GNP | Total Net Investment as Percentage of NNP | Domestic Net Investment as Percentage of NNP |
|---|---|---|---|---|
| United States 1869–1908 | 21.7 | 21.8 | 13.6 | 13.8 |
| Great Britain 1870–1909 | 13.8 | 10.0 | 12.1 | 8.2 |
| France 1878–1911 | — | — | 8.3 | 5.1 |
| United States 1925–1930 | 20.4 | 19.8 | 12.7 | 12.0 |
| Great Britain 1925–1930 [a] | 14.1 | 13.0 | 6.6 | 5.4 |
| France 1927–1930 | 11.7 | 9.8 | 9.0 | 7.0 |
| United States 1947–1952 | 19.7 | 17.9 | 13.5 | 11.6 |
| Great Britain 1948–1952 [b] | 16.8 | 15.7 | 8.0 | 6.8 |
| France 1949–1952 | 18.5 | 18.6 | 9.1 | 9.2 |

[a] Domestic estimates for 1924–1930.

[b] Central Statistical Office, *National Income and Expenditure* (London: HM Stationery Office, 1956), Tables 1, 6, and 54.

SOURCE: Kuznets, *op. cit.*, Tables I-1, I-2, I-3A, B, and E, II-1, II-2, and II-4A, B, and E. In some cases data in the tables have been averaged.

ceeded net investment, as we were, on balance, borrowing during the period. But Great Britain and France were substantial net lenders, the latter lending on the average over 3 percent and the former almost 4 percent of net national product. If repaid, foreign investment may be as productive as, or more productive than, domestic investment, permitting a country to import more than it exports—as indeed Great Britain was able to do on a large scale during the interwar period. But much foreign investment has been lost: in the French case largely in Russia as a result of the Communist Revolution and in the British case because of the need to liquidate foreign assets to finance two major wars. Hence, although this is to some extent conjectural, it seems quite probable that domestic rather than total net investment comes closest to measuring the present usefulness of the investment activities of the period.

Second, during the period Great Britain's depreciation allowances were much lower than those in the United States—amounting to only 20 percent compared with 43 percent of gross domestic investment. This explains why our total gross investment was almost 8 percentage points and our net only 1.5 percentage points higher than Great Britain's. How was such a difference possible? First, in Great Britain no depreciation was deductible for tax purposes on buildings until 1918, and the rate was only 1 percent per year up to 1945. In addition, depreciation reflects more than physical wear and tear; it also depends on the anticipated decline in value quite apart from wear and tear. Consider an automobile used by business: it will have lost almost all its value in seven or eight years. But unlike the wonderful one-horse shay, it does not then fall apart; instead, by sufficient repair it could probably be made to last as long again. It is a *matter of business judgment* as to when it becomes more profitable to junk and replace rather than to repair. It is clear that in Great Britain business practice, which came to be embodied in the tax laws, was to depreciate capital much less rapidly than in the United States. The actual difference may be somewhat less than the statistics convey, as, if it were anticipated that equipment would be used for twenty years rather than junked in ten or less, it might be built better. Nonetheless a country whose equipment has an average age of five years is practically certain to be able to produce more efficiently than a country whose equipment has an average age of ten years—even if the older equipment was originally of somewhat better construction. Thus during the long period up to World War I the United States was ahead on every count: it was replacing its stock of capital more rapidly, its net investment was higher, and less of its investment was going abroad to run the risks of loss in revolution or war.

During the twenties the same broad pattern prevailed, but since World War II a sharp change appears to have taken place in both Great Britain and France, as the cumulative results of low depreciation and low capital formation became evident. In Great Britain depreciation allowances rose to 57 percent of gross domestic capital formation as depreciation policy was liberalized to permit a 2 percent annual rate on buildings, with a special initial allowance of 10 percent on new buildings and 20 percent on new equipment. But net investment, and especially net domestic investment, remained low, partly as a result of the impact of highly progressive taxation on saving by individuals. Although the whole matter is still tentative, the evidence appears to justify the not unexpected conclusion that high rates of saving and investment appear to accompany rapid economic development. To the extent that this is correct, the fact that in recent years many countries have equaled or exceeded our rate should be of considerable interest.

### Government and the Rate of Saving

As Table 33-2 makes clear, in the United States the decisions of individuals have been responsible for perhaps 60 percent of all saving, with corporate saving accounting for an additional 25 percent and the contribution of government to saving for the remaining 15 percent. In view of the importance of saving to economic development, to what extent should the rate of saving be of concern to the government? This question was raised in Chapter 17, but discussion was postponed so that it would be considered as a part of the general discussion of economic development.

Recall that Sir Dennis Robertson, the distinguished British economist, writing primarily with Great Britain in mind, stated flatly that the government "has taken upon itself responsibility for determining the rate of growth of the community's real capital." No similar responsibility appears to have been accepted by the American government. It is true that the government became, in one sense, concerned with the level of saving during the Great Depression. It was then urged to borrow funds that might otherwise be idle and in this way help to stabilize the flow of spending. And in recent years, when inflation has been a problem, the earlier thinking was reversed and the government was urged to run a surplus to counteract inflationary pressures and help to stabilize the price level. But simply reversing the depression procedure is clearly deflationary only if the surplus flows into idle balances—just as running a deficit is fully expansionary only if financed with funds that otherwise would be idle. In short, as Chapter 17 pointed out, during depressions the main impact of government surpluses and deficits is likely to be on the level of income—for reasons to be discussed further in Section IV—whereas during prosperity the main impact is likely to be on the relationship between saving and consumption.

The last statement is worth elaborating. If during prosperity the government uses a surplus to retire debt and none of the funds involved flow into idle balances but instead are re-lent in full as rapidly as they would have been spent in the absence of the taxation that brought about the surplus, then no contribution has been made to reducing spending. But—and this is what is here important—*saving will have been increased by the extent to which the funds involved would have been spent on consumption if they had not been used to pay the taxes responsible for the surplus.* Thus to the extent that funds derived from debt retirement expand private investment beyond what it would have been in the absence of taxation, then the government surplus—whether its purpose is to prevent inflation or to reduce the volume of outstanding debt—will have a significant influence on the rate of saving and investment. Keep in mind that a federal surplus of $7 billion would have amounted to about 25 percent of private domestic capital formation in 1960, and would have had an important influence on the quantity of saving; yet such a surplus could be continued for over forty years without retiring the present federal debt.

This brings us back, once more, to the fundamental question of the extent to which the government should accept responsibility for the rate of saving. So long as the saving provided without government action is satisfactory, the question, of course, remains academic. This is the situation that appears to prevail in the United States at the present time, so that conscious acceptance of direct responsibility by the government does not appear in our case to be particularly urgent. But, in my judgment, it seems obvious that, to the extent that the government accepts ultimate responsibility and continuing concern for economic development in general, it must also accept similar responsibility and concern for the rate of saving.

### The Contribution of Saving to Economic Development

Let us conclude by summarizing the contribution of saving to economic development. Two points appear most important. First, the significance of saving varies greatly, depending on the circumstances of the economy in question. In an underdeveloped area where the rate of saving is low and capital scarce, the provision of additional saving may well be essential if development is to proceed. But in a developed economy, where capital is relatively plentiful and depreciation allowances are large, the need for additional saving may be relatively small. Second, especially in the case of developed economies, saving facilitates development rather than initiates it in the sense that large saving *by itself* may not lead to important increases in production but a considerable amount of saving is likely to be essential if improvements in technology are in fact to bring about significant expansions of output.

# 34

# The Role of Natural Resources

## Natural Resources and Physical Environment

Natural resources include "everything made available by nature that is useful for production." Even defined as broadly as this, a discussion of natural resources by no means covers the full impact on man of the physical environment in which he finds himself; it is this broader impact with which the geographer is concerned. The economist, however, is more narrowly interested in the direct contribution of environment to economic activity in general and production in particular, and the direct contribution is made through natural resources as we have defined them.

The question with which this chapter is primarily concerned is the extent to which differences in the availability of natural resources are responsible for differences in economic development among countries. We shall examine the matter from two points of view. First, we shall consider the essentially static question of the extent to which differences in resources are responsible for observed differences in living levels, which in the main reflect differing rates of development in the past. Second, we shall consider the essentially dynamic question of the impact of resources on economic development treated as a *continuing process*. Starting from the first point of view, differences in the availability of natural resources would appear to influence realized living levels in three ways. If a country does not possess resources, it has to pay for them; let us examine, therefore, the payments that are made for the use of resources. Moreover, the resources have to be transported to the place of use; we shall examine, therefore, whether transportation costs are important in connection with living levels. Finally, we shall examine the extent to which inability to pay for "superior" resources is responsible for the use of "inferior" resources, and then consider the further question of whether it is the poor resources or the poor productivity explaining the inability to pay that should be blamed when "inferior" resources are used.

### The Derivation of Economic Rent

As we have seen, economic rent is the compensation paid for the use of natural resources. Few things have been more overemphasized in economics than economic rent. Ricardo, perhaps the greatest of the classical economists, came close to suggesting that the only ultimate result of economic development would be to benefit landlords by raising the rent they received. And generations of economic students have risked failing if they did not learn that "economic rent is not a cost of production." The importance of this statement can be exaggerated, but understanding its meaning will help us to understand the influence of natural resources on living levels.

Let us take farm land as an example—not because it is necessarily the most important natural resource of a developed economy such as the United States but because it is the example that has been conventionally used. Suppose we start by assuming that all such land is of uniform fertility. At any time there is a certain amount of land that can best be farmed by one man. If he tries to farm more land, he will not be able to cultivate all of it properly and his output will be less than if he cultivates a smaller amount of land more intensively. In the other direction, if he cultivates less than the proper amount of land, his output will again be smaller. Hence the particular amount of land involved is the amount that will produce the maximum, or optimum, output per farmer. Strictly, the amount must be defined with reference not only to a given state of agricultural technology but also to a given quantity of capital embodied in tools, equipment, and, as we shall see, improvements of the soil itself; for changed techniques or amounts of capital can obviously alter the amount of land a man can farm.[1]

Now suppose, with given technology and a fixed quantity of capital, there is so much land available—of uniform fertility—that every farmer can have that certain amount which maximizes his output. Under such circumstances would land have any value? The answer is no value as a result of present use, though farsighted people might still be willing to pay something for it in the hope that population growth or some other change in circumstances might make it useful in the future. But if no one anticipated any changes in the future—believing instead that as much land as anyone wanted would continue to be freely available—then land would have no economic value and therefore earn no economic rent; it would in fact be a free good like the air we breathe.

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[1] For those familiar with Appendix B (Chapter 16), the point involved is that at which the average physical product per unit of the variable factor—in this case the labor of the farmer—is at a maximum.

What then makes land valuable? The obvious answer is that there is not enough to go around. Under such circumstances more and more labor will be applied to the land that is available; in other words, it will be cultivated more and more intensively. But there is an ultimate point beyond which additional labor *does more harm than good.* After each rice plant has been lovingly planted by hand in the tiny paddy that one man typically cultivates in Japan, there is nothing left to do but let the plant grow. Even if labor were free, there would be no point in utilizing any more of it. Just as there is a certain amount of land that gives maximum output per farmer, so there is a certain amount of labor that will maximize the output that can be obtained from a given quantity of land (techniques and the quantity of capital still being constant).[2] Fortunately this point of maximum total output has little relevance to developed areas, as they are relatively plentifully supplied with resources. But the fact that labor can become useless, even if free, helps to explain why in underdeveloped countries situations are often found where labor in agricultural areas is employed only part of the time or employed at tasks that really contribute little or nothing to production. The latter case is described as "disguised" unemployment; we shall see that an important aspect of development in underdeveloped areas is finding ways of utilizing agricultural labor that would otherwise be unused or wasted on useless work.

## Economic Rent as a Surplus

What, then, determines the level of economic rent? Let us recognize the obvious fact that land is not of uniform fertility; rich bottom land in Iowa is better for farming than the sandy wastes covered with scrub oak that make up much of Cape Cod. But let us disregard for the moment the fact that land is located differing distances from the market for its products. If we consider only differences in fertility, it is obvious that long before anyone would want to attempt to farm Cape Cod he would be willing to pay quite a lot for the use of land in Iowa. This, then, is the essence of the matter: *economic rent is a surplus paid for*

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[2] Again for those familiar with Appendix B, the point involved is that at which the total physical product is at a maximum.

*the superior fertility of particular parcels of land.* It is limited at any time by the availability of less fertile land "on the margin of cultivation" —just worth cultivating. Thus, if the demand for food increased enough, Cape Cod might be worth cultivating. Before doing so, however, a farmer would be willing to pay more for the use of Iowa land; but he would never be willing to pay as rent for Iowa land *more than the increase in the value of his output that he judged would result from farming Iowa land rather than land just worth cultivating on Cape Cod.* The individual farmer, if he wishes to continue farming, has, of course, no alternative but to pay the rent charged for Iowa land; it is part of his individual cost of production. From the social point of view, however, it is not a cost that has to be met; the land would still be available if nothing were paid for its services. This is the sense in which economic texts have stressed that "economic rent is not a cost of production" but rather a surplus the size of which is determined by the superiority of a particular parcel of land over land that, at the prevailing level of demand, is just worth farming.

What about the influence of differing distances from markets, which we temporarily set aside? In any full statement of specific differences in rent the effect of differences in location, as well as differences in fertility, clearly must be taken into account. But to the extent that the contention, which is shortly to be advanced, that transportation costs are relatively unimportant in explaining differences in living levels is correct, it follows that locational differences are likely to be of relatively minor importance in explaining the broad differences in living levels with which we are concerned. To the extent that it is possible to do so, however, we shall take into account the influence of locational differences when we attempt to estimate the importance of actual rental payments in the section to follow.

In the light of this analysis, it is possible to understand Ricardo's pessimism, for he thought of development not so much as raising living levels as permitting more people to survive. With more and more people and a given amount of land, the conclusion that the future belongs to the landlords follows inevitably. What Ricardo underestimated was the extent to which improved technology and increased quantities of capital would permit more and more to be grown with little or no increase in the amount of land in use. It is this that has kept the landlords in their place, created a "farm problem" in the United States, and made possible the rapid expansion of our population. But in underdeveloped areas, where the increase in population has often outrun the improvement in farm technology, the share of the national income received by landlords often raises serious social problems.

In the explanation of economic rent just presented, the assumption that land was of uniform fertility was dropped. Were fertility uniform it would be considerably harder to explain the level of rent. In such circumstances land would have no value until all land was in use—speculations on the future again aside. But once all land was in use the level of rent would be fundamentally determined by bargaining between landowners and cultivators, with possible outcomes ranging from situations in which cultivators would receive little more than subsistence to those in which landownership would not be particularly remunerative. Since in most countries there are wide variations in fertility, the point just made is not generally important; but it may help to explain why there are such wide variations in the share of agricultural output received by landlords in countries where population is dense, farm technology stagnant, and available land fully utilized.

## The Quantitative Importance of Economic Rent

It is of greater general significance to stress again that the level of economic rent for any resource cannot be larger than the addition to the value of production that results from using that particular resource rather than one for which there is no present value, plus any additional payment that may be made because of the superior location of the resource in question in relation to the market for its product. What quantitatively does this amount to? How much economic rent do we today pay in the United States? As already mentioned, the overall amount is not precisely known, as economic rent is in business accounts always combined with interest payments on the capital used to improve what nature has provided. For example, information regarding "agricultural land" is available; in 1950 such land appears to have been responsible for 17 percent of the value produced on American farms.[3] But as agriculture in that year accounted for only about 8 percent of total activity, the contribution of "agricultural land" to the national income would appear to have been less than 1.4 percent. But this *overestimates* what is involved, as the value of "agricultural land" includes the value of the capital invested in improving the original unbroken prairie. Probably less than half of agricultural rent—well under 1 percent of the national income—represents payments for the "original and indestructible powers of the soil" that nature provided, which, as we have seen, is what an economist means by "land."

Another way of getting at the same point is to stress that "rent," as the economist uses the term, bears no relationship to any other kind of "rent." Thus perhaps 30 percent of the rent paid by the average person for a house is used to pay the taxes assessed on the property, and almost all the remainder goes to maintain and provide a return on the capital that was invested in building the house. Probably no more than 5 percent of the "rent" paid by the average person is a payment for the use of the unimproved land on which the house stands. Nor are our national income estimates of any help. The "rental income of persons" that they report is roughly the rental value of the nation's stock of houses—the total largely imputed because of the extent to which houses are occupied by their owners. The estimate, therefore, is at once much too high because it includes houses and too low because it omits nonpersonal payments for the use of resources.

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[3] Theodore W. Schultz, *The Economic Organization of Agriculture* (New York: McGraw-Hill Book Company, 1953), p. 138.

Although the overall amount is unknown, the amount of true economic rent paid is almost certainly small because our resources are not particularly scarce. In fact, despite the increase in population, land "in agricultural use" is today smaller than it was in 1910, though land "in farms" has increased by roughly 30 percent as the feed lot replaced open grazing and farms came increasingly to include "nonfarm land grazed by livestock." Many areas of the United States that were farmed in the past have today no value whatsoever as farm land. New England is covered with abandoned farms; fields cleared of rock with back-breaking labor—as anyone knows who has seen what lies under what appears to be a small stone wall—now support only a crop of summer tourists. Even in the agricultural Midwest large areas of marginal land in the "dust bowl" have been allowed to revert to pasture. And, as a part of the farm program, considerable amounts of agricultural land have in recent years been removed from production. Clearly we are not short of farm land.

### Natural Resources Other Than Land

Nor, despite the Wendell sisters, has the value of urban land risen much in recent years. In the main the rise has been limited by a kind of technological change. For the mobility provided predominantly by the private automobile has vastly increased the amount of readily accessible land; and the resulting exodus to the suburbs—or even exurbs—has significantly restricted the rise in urban land values that would otherwise have taken place.

And the same would appear to apply to other natural resources. True, the Mesabi Range in Minnesota—50 percent or better pure iron—is now largely exhausted, but somewhat lower-grade iron is available in large quantities in the United States and richer veins have been discovered in other areas. We have enough coal for hundreds of years at present rates of use, so that here again there has been little deterioration in availability—and, therefore, little rent paid for the more readily available coal that has been mined thus far. Clearly we shall have to use inferior resources in the future and become increasingly dependent on imports; and significant economic development on a world-wide scale, as is suggested in Chapter 39, would rapidly alter the present picture. But, thus far, resources have remained sufficiently available to hold down the general level of economic rent.

Undoubtedly the outstanding exception to what has just been said—and the first thing people think of when they think of a man made rich by exploiting resources—is the oil millionaire. There is no doubt whatsoever that a pool of oil is a nice thing to find under one's house. But it is the total cost of economic rent rather than the spectacular individual case in which we are interested. Even when payments for farm land, for urban land, and for other natural resources are totaled, it is most unlikely that the sum is larger than 2 or at most 3 percent of the national income. Hence the elimination of all payments of economic rent would not make a great deal of difference to our economy.

But—and here is the point to which this extended analysis has led—*if payments of economic rent are small,* then *benefits from owning superior resources must also be small.* For the only benefit that results directly from owning superior resources is the economic rent such resources receive. But if the benefit is small, then the *ownership of superior resources by one country cannot be of any great significance in explaining its superior living levels*—provided, of course, that the resources involved can be transported at reasonable rates to, and paid for by, other countries.

## Living Levels and Transportation Costs

Is the fact that resources may be concentrated in particular areas—thereby permitting such areas to minimize transportation costs—a factor of importance in explaining differences in living levels? This possibility we may dismiss rather rapidly, for water-borne transportation is remarkably inexpensive. There are many areas of the United States where American coal costs more than it does in London. And the cost of delivering Texas fuel oil to London is little more than the cost of delivering it to New York. As most of the major countries of the world can be reached by sea, it is hard to explain broad differences in living levels among countries in terms of transportation costs. Undoubtedly there are situations in which such costs are important, but they are probably far more important in explaining differences *within* countries than *among* countries. "Prices slightly higher west of the Rockies" is a well-known phrase; it is probably fair, however, to place emphasis on the "slightly." Not only are transportation costs rather small in relation to the value of most of the items that make up present living levels; the bulky items, where transportation costs are important, are rather widely distributed over the face of the globe and therefore do not impinge, through heavy transportation costs, on the living level of any particular area. Because this may be an unexpected conclusion, it is important to stress that differences in transportation costs must obviously be taken into account in any complete explanation of differences in living levels. The point here being made is simply that *quantitative* differences in such costs are unlikely to be of importance in explaining the broad differences in living levels with which we are concerned.

### Paying for Natural Resources

There remains the third possibility distinguished at the start of the chapter: that inability to pay for "superior" resources may force the use of "inferior" resources and in this way significantly lower living levels. This is undoubtedly the most complicated way in which natural resources influence living levels. Although there are payment problems within countries, payment difficulties are greatest across international boundaries, as the discussion of Chapters 22 and 23 made clear. In the discussion to follow, all the short-run reasons why a country may find it difficult to finance imports will be omitted in order to permit us to concentrate on basic considerations.

The fundamental question we want to consider is why any country should work its own "inferior" resources if it can buy "superior" resources from abroad. Although there have been from time to time interferences with imports—and since World War II an actual embargo on trade with the Soviet Union in "strategic" supplies—most countries in the past have stood ready to export, and export freely, the raw materials they possessed. To the extent that exports are freely permitted—and the remainder of the argument disregards the cases in which exports are restricted—every country has access to the most readily available natural resources in the world, at no more than the addition of transportation costs, *provided that* the country can pay for them. The essence of being able to pay for imports is to be able to make something that is wanted abroad—and to make it at prices as low as or lower than those prevailing in world markets. Once the ability to export on the scale necessary to pay for imports is achieved, a country is in a position to buy "superior" resources wherever they may be located.

Note the quotation marks used in connection with "superior" and "inferior." In each case the meaning has been physical or technical rather than economic; thus a "superior" resource is one that can be produced with less, whereas an "inferior" resource requires more, productive effort measured on some internationally comparable basis, such as man-hours of work. But the technically superior resource is not always the cheapest for a given country. When a country starts to import more than it exports, as we saw in Chapter 22, either its exchange rate will depreciate if it is not on the gold standard or it will lose gold if the gold standard is in operation. One or the other movement will continue until exports become sufficient to pay for imports. As its exchange depreciates or its prices decline as a result of gold exports, the country will find that its own technically inferior resources become cheaper in economic terms than the technically superior resources that are available abroad. The result is that a country that achieves high productivity and can, therefore, export easily is likely to add further to its level of living because the resources easiest to produce physically are also likely to be, for it, cheapest economically. But a country having low productivity as well as difficulty in exporting is likely to find that its own inferior resources are, for it, cheapest, and so have to be used despite the greater physical effort required for their utilization. This in turn brings about an even lower level of living than results from the low productivity we premised at the start. It is the first of a number of cases in which we shall find that the process of economic development is cumulative. "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath."

The classic example of this point is Switzerland: with few resources of its own and a location a long way from the ocean, it has achieved the highest level of living in Europe. The ability to produce high-grade watches more cheaply than they can be produced anywhere else does not by itself explain the whole Swiss achievement; the demand for watches is simply not that large. But it is representative of the abilities that have made it possible for Switzerland to export easily and in this way obtain needed resources wherever they were cheapest.

### Inferior Resources versus Inferior Productivity

What is involved in such circumstances: inferior resources or inferior productivity? Perhaps we can simplify the issues by thinking in terms of the reaction of two Vermont farmers to the opening up of vastly superior agricultural resources in the Midwest. One sensible reaction would be for them to go west; but this may be ruled out as no solution to international problems in an era of immigration restrictions. Suppose Vermonter Smith leaves his farm and develops the ability to produce something that the midwestern farmer wants—and to produce it as cheaply as it can be produced anywhere else in the world. In this case Smith will be buying his food from the midwestern farmer at prices higher than a midwestern consumer pays by only the amount of the transportation costs involved—and his level of living will be high. But suppose Vermonter Jones continues to farm his rocky and hilly Vermont acres. Not only will he be using inferior resources to feed himself, but, because he will have little to sell, he will have to make for himself much of what his former neighbor Smith buys from Sears, Roebuck, and his level of living will be low. This, then, is the question: Do we say that Jones' level of living is low because he is farming a rocky Vermont hillside or because he did not behave like Smith?

Are differences of this sort important? Definitely. Take the British and American coal industries. In 1955 about 700,000 miners, or 3 percent of the entire British labor force, provided each Briton with 4.3 tons of coal; in the same year in the United States 210,000 workers, or one third of 1 percent of the American labor force, provided each American with 2.8 tons of coal—more not being required because of the ready availability of substitutes. Rather more than eight times as many hours were required to mine a ton of coal in Great Britain as in the United States. Clearly the greater expenditure of labor in mining coal is a factor in explaining why the British level of living is lower than in the United States. But, as before, the question is: Should the blame be placed on the inferiority of British coal resources or on the failure of the British to produce something they could trade for the superior resources—which in this case might be oil—available elsewhere?

Basically the answer to this question depends on the alternatives that are taken as available. So long as we assume that Jones has no alternative except to remain on his farm, it is obvious that the rocky quality of his acres influences Jones' living level. But we get a different answer as soon as we open up the possibility of Jones following in Smith's footsteps. The whole emphasis of this volume is that alternatives are not to be taken as fixed; the *creation* of desirable alternatives is a proper—and very important—function of an economic system. Viewed in this light, whenever an economy is utilizing resources that are technically inferior in the sense of requiring more effort to work than resources available elsewhere (with appropriate allowance for transportation costs), it has open to it the possibility of retiring its inferior resources by developing new and better alternatives for the use of its labor force. This, of course, does happen: Cornwall's tin mines, once of major world importance, are now almost entirely closed down and Great Britain's tin comes from Malaya in exchange for exports. But, because Great Britain has been unable to develop exports sufficiently competitive in world markets to permit her to meet her energy requirements from cheaper sources than her own inferior coal seams, the same shift has not taken place in coal. And the fact that it has not is a part of the price that the British level of living continues to pay for the British economy's level of productivity.

### Natural Resources and the Process of Development

Thus far we have suggested, to summarize, that neither payments of economic rent for the use of natural resources nor differences in transportation costs appear to be of sufficient importance to help much in explaining actual differences in living levels. And we have also suggested that no economy needs to use technically inferior resources if only its degree of development and level of productivity is sufficiently high to provide it with goods to exchange for superior resources.

But it is undoubtedly a great deal easier to suggest that Jones should follow in Smith's footsteps than for him actually to do so. For what we described Smith as achieving was not merely the production of something that was wanted but also its production at prices as low as those that prevailed anywhere else in the world. In the *process* of achieving a high degree of development and productivity, the availability of technically superior resources is undoubtedly helpful. For the availability of superior resources may have favorable repercussions on all the factors we have discussed as likely to promote development. This is particularly likely to be true when development takes place without conscious planning. It was the availability of coal—and to a lesser extent iron ore—that led to the development of a steel industry in England. But it is perfectly possible, as the Japanese have demonstrated, to have a modern steel industry without raw materials. Again, the availability of a readily exportable natural resource may well make capital accumulation easier in the crucial initial stages of development by reducing the number of domestic man-hours required to achieve a given quantity of foreign exchange—and in this way minimizing the impact of development on the domestic level of living. It is especially helpful if the natural resource is such that considerable domestic employment must be—or can be—attached to it before export takes place. Even in the case of oil, royalty payments are in most cases small in relation to the value of the oil at the time of export. The domestic labor that is, in the main, responsible for the value of the oil in excess of royalty payments might have been used to create something else that could have been exported, but it might well have been more difficult to do so. In other words, Smith, when he moved to town, might have developed insurance services for export to Iowa. It might, however, have been easier to export to Iowa if, say, Vermont happened to have the raw materials needed to produce fertilizer—

even if such materials were only a small part of the value of the fertilizer at the time it left Vermont.

### Some Conclusions

The role of natural resources in connection with economic development—and particularly the quantitative importance of resources—is not a matter that has received extended consideration by economists. As a result it is hard to know to what extent the emphasis of this chapter on the relative unimportance of resources reflects the consensus of their thinking. It seems probable that few would deny the quantitative unimportance of economic rent or of transportation costs. Nor does it seem possible to deny, in the light of the accomplishments of a country such as Switzerland, the theoretical possibility that high productivity and a high level of living may be achieved without an abundance of natural resources. Undoubtedly differences of opinion are most likely to develop in regard to the role of readily available resources in facilitating the *process* of economic development. Nothing that has been said in this chapter in any way denies that abundant resources make economic development easier. What has been stressed is that, even without readily available resources, economic development is nonetheless perfectly possible—though it may well be more difficult.

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# Some Other Factors Influencing Development

## Introduction

Thus far we have attempted to explain economic development in terms of such predominantly economic factors as research, innovation, and capital formation. Actually there is almost no aspect of man's behavior or of his social organization that does not have a bearing on the rate at which development takes place. As a result this chapter cannot possibly hope to cover all the factors involved. It is included primarily to make clear that development is not the result of the operation of certain economic abstractions, but rather part of the dynamic process of growth of a society. What we shall try to do is provide some examples of the way in which considerations broader than those normally included in the term "economic" can promote or retard development. *In no sense is what follows a systematic coverage of the broader influences on development.* Rather, the examples have been chosen to show how small differences in emphasis can lead to wide differences in results. This will be achieved, in the main, by contrasting Great Britain and the United States, for the broad similarity of their cultural heritage makes the differences that have emerged of particular interest.

As we move from more strictly economic matters to those of wider significance, the question as to whether economic development—and especially rapid economic development—is worth the costs that are involved will come increasingly to mind. The costs at issue are many and varied. Because development means change, there is involved an inevitable sacrifice of security. Old ways of doing things have to be discarded and new ones learned. In the short run at least, there is likely to be a reduction in leisure—if only in the form of sleepless nights as adjustments to changed circumstances are worked out. And the sort of competitive pressures that are so useful in promoting innovation are also very effective in promoting ulcers. Is the game worth the candle? Chapter 8 made clear why, in my judgment, rapid development remains important and will continue to be worth the costs involved until a far higher level of living has been achieved for all mankind. Even among those who agree with this broad proposition, there is room for endless disagreement as to just how much development justifies what cost in other benefits forgone. In short, value judgments are obviously very much involved. In the discussion to follow no effort has been made to conceal the cost of economic development, so that those who feel that the game is not worth the candle can be guided by their own value judgments.

### Materialism and Economic Development

Let us start with fundamentals. Economic development involves an increase in the material well-being of a society. A belief, therefore, in the importance and desirability of material things undoubtedly helps to promote development. Conversely, if everyone were convinced that the length of time that he would reside in purgatory was a direct function of the quantity of material things he had acquired in his life, development would undoubtedly be slower. But this does not mean that, in seeking economic development, man seeks merely material things; in practice there are both material and nonmaterial advantages. We would have far more material things today than we do in fact have if we were today prepared to work the 50 percent longer hours that prevailed at the turn of the century. Although there is likely to be hard work involved in achieving development, the fruits of development may be taken in the form of shorter hours and greater leisure quite as much as in the form of more material things. In fact, one of the things to be stressed about continuing development is that it will, in time, permit both leisure and material benefits rather than require a choice to be made between them.

Not only is society's attitude toward material things as such important; it is also important as it influences the innovators who are so largely responsible for development. If social prestige is reserved, let us say, for soldiers and statesmen while businessmen are considered to be engaged in menial work, then—*to the extent that they can*—those with ability are likely to enter the army or the government rather than business. The qualification is important: if the prestige occupations are restricted to those with qualifications other than ability while business is open to all, the inability of able people to enter the army or the government may more than offset the lower prestige of business, leaving the average level of ability in business higher than it would have been in the absence of restrictions. Clearly the relationship among social attitudes, entrepreneurial motivation, and economic behavior is highly complex. But it seems reasonable to conclude that a society that wants to develop and honors those responsible is likely to develop far more rapidly than a society that has a greater regard for other values.

### Differences between British and American Unions

The point just made can be illustrated by comparing the behavior of British and American unions. In Chapter 21 we considered the extent to which unions in the United States have been responsible for slowing down economic development and reached the Scotch verdict: "Not proven." The same cannot be said of unions in Great Britain. Recall that, in the American case, some unions clearly retard development by insisting, for example, on "make-work" or "featherbedding." But, equally, other unions contribute to innovation and development by convincing their members that they will not be harmed by change but, instead, can count on receiving their fair share of the resulting increase in production. Why is the situation different in Great Britain? Basically the answer is simple: British unions have placed more emphasis on security and have been less willing to accept change than have unions in the United States. Historically, mobility in America has been high—between both different areas and occupations. But in Britain movement over even short distances—from Wales to the Midlands, for example—has been far more difficult, and a son has tended to follow the occupation of his father.

This is, in fact, one of the situations in which more is given to him that hath. For the rapid growth of the American economy—both in population and in production—has meant that relatively few industries or areas have declined on an absolute basis. Only rarely has labor been asked to accept changes that actually resulted in loss of jobs. This in turn has made labor more willing to accept changes, which in turn, by increasing productivity and expanding demand, has often eliminated job losses that might otherwise have occurred. Thus in an important sense insecurity can lead to security and excessive emphasis on security to insecurity.

Consider, for example, the attitudes of the two coal-mining unions. As already noted, John L. Lewis never offered any significant resistance to the mechanization of coal mining, contending instead that only through mechanization can miners ever expect to receive the sort of wage to which they are entitled for the dangerous and disagreeable work they do. Although between 1947 and 1955 coal production declined by 25 percent and employment by 50 percent, the union made no effort to slow down mechanization—despite the fact that output per man-day increased in the eight years as much as it had in the previous twenty-seven. True, to spread employment the union insisted on a work-sharing scheme that had the effect of increasing costs of production by keeping mines working at less than capacity when coal might more economically have been mined by shutting some mines down and working others more intensively. But these restrictions were clearly thought of as temporary and no effort was made to prevent, in addition to mechanization, consolidations, expansions, or permanent abandonments. In fact, Mr. Lewis has been quoted as saying some years ago that he would rather be the president of a union of 100,000 well-paid miners than lead 400,000 poorly paid workers. When one realizes that, by implication at least, this means that Mr. Lewis has been prepared to see three quarters of the workers he once represented lose their jobs, this is a remarkable statement; yet in 1955 only 210,000 were at work, so that Mr. Lewis was in that year well on the way to realizing his preference!

Contrast the situation in Great Britain, where miners have long resisted increases in productivity on the ground that they meant "working yourself or your buddy out of a job" or "merely increasing the bosses' profits." So deeply engrained is this point of view that, after nationalization had ended the bosses' profits and while both coal and the labor to mine it were in extremely short supply, miners continued to resist increases in productivity. In one extreme case, seeking to establish a model mine, the Coal Board spent as much again on re-equipment and modernization as had been paid to the owners when the mine was nationalized; but, as a result of deliberate restriction of production by the workers concerned, *there was no increase whatsoever in output.* Not until the Coal Board appealed to the central office of the union and received permission to shut down the mine and deprive the workers involved of their seniority rights did production and productivity start to reflect the costly mechanization that had taken place. It is possible that such extreme resistance to mechanization is passing; there are observers who believe that the poor performance of the nationalized coal industry is more the result of inadequate management under nationalization than of continuing opposition to improved technology on the part of labor. But whatever the cause, the result is that the Coal Board officially estimates the anticipated increase in productivity over the decade from 1955 to 1965 at 13 percent, which contrasts with a realized increase of 50 percent in the United States during the five years from 1950 to 1955.

In short, what unions achieve depends very much on what they seek to achieve. If a union believes that the long-run interests of its members are best served by remaining receptive to changes in technology, the productivity of the industry is likely to rise steadily; but if the union believes that security and the reduction of job loss is of primary importance, increases in productivity will be slower. Again if a union believes that long-run interests of its members are best served by free enterprise, it will attempt to make such a system work; if it prefers socialism instead, it can hardly be expected to devote much effort to promoting free enterprise. The implications of this last statement will be elaborated in the section that follows.

### Social Mobility, Socialism, and Economic Development

Given the closeness of their cultural heritage, the question as to why socialism is so widely accepted in Great Britain and almost not at all in the United States is of great interest. A full answer is beyond our scope, but the matter seems worth exploring in order to focus attention on the fact that an economic system must do more than satisfy economic wants; it must be a part of a social organization that provides an acceptable life for its citizens. For there is considerable evidence that the character of British society rather than of the British economy explains the extent of acceptance of socialism and the slowness of British economic development. Let us examine the subject primarily as an example of the impact of influences other than economic on the performance of an economy.

In Great Britain the prevailing class structure appears to have been far more rigid than in the United States (though the rigidity is, of course, decreasing under the impact of socialism). This rigidity stems in considerable part from Britain's hereditary aristocracy, based on birth and landownership. An aristocracy has been defined as a class that has lost its economic *raison d'être*. This has never entirely applied to Great Britain, for the British aristocrat until recently lived on his estate, was in close touch with his tenants, and played a role in promoting agricultural improvements. Further, though neither he nor his younger brothers —who under primogeniture do not inherit any part of the estate—engage directly in business (which is referred to as "being in trade"), nonetheless the aristocracy has been able to preserve its position of wealth long after revenue from landed estates declined in importance. In part this was possible because coal was discovered under the estate or the land became urban with the growth of cities, but judicious investments and strategic marriages also played important roles. The result was that, though acceptance into aristocratic circles was always slow, it continued to be the goal of the successful industrialist, who sought to achieve it by sending his sons to proper schools, purchasing estates for the prestige they conveyed, and arranging appropriate marriages between his daughters and aristocrats in need of wherewithal to maintain their position. Hence social prestige continued to depend heavily on the accident of birth, and class lines remained relatively rigid.

This rigidity has been intensified by the character of the English educational system. Even today of the age group between fifteen and eighteen, only about 15 percent are studying full time, and only about one in seven of the remainder is engaged in even part-time study. In sharp contrast, over 85 percent of those between fourteen and seventeen in the United States are enrolled in educational institutions, and of those eighteen and nineteen years old over 30 percent are enrolled in educational institutions, with 60 percent of those enrolled, or almost 20 percent of the age group, attending colleges or universities. Of the 15 percent between fifteen and eighteen who study full time in Great Britain, by no means all receive a training that makes entrance to a university possible. Further, the decision as to which type of education a child shall receive is normally made at eleven, on the basis of examinations given at that time. Thus, except where parents can afford a private education or the child is so unusually able that he can pass a re-examination when he is fifteen, the decision as to whether a child is even to be prepared for college is made before he is twelve. And these arrangements, which were inaugurated in 1944, represent a *considerable improvement* over the previous ones.

Of the small minority that continue beyond fifteen on a full-time basis, perhaps four out of five attend a "secondary grammar" school financed with public funds. The famous English "public schools"—actually private schools charging tuition that are "public" in the sense that they are not profit making—educate relatively few, though they send proportionately more of their graduates to universities, especially Oxford and Cambridge. Hence those who undertake academic work at the university level are drawn from the very small group receiving a private education and the somewhat larger but still surprisingly small group selected to be prepared for college at public expense on the basis of intellectual abilities demonstrated at the age of eleven.

At the college level itself England has never had anything comparable to American state or municipal universities. Even today only about 5 percent of those of college age are enrolled in English universities on a full-time basis, with another 2 percent attending full time all other institutions of learning, some of which would be called colleges in America. Yet, as Shaw made clear in *Pygmalion,* the British set great store by "accent," which is not easily acquired except by attending college.

As a result, the attractions and prestige offered by the professions and the civil service draw most of the relatively small number of English university graduates, so that there are relatively few available for business. Those who do enter business tend to perform management functions immediately with little or no actual plant experience. There is, furthermore, by American standards, a shortage of technical and staff personnel and junior executives.[1] One result of this is that, in the absence of anyone to whom they can delegate, British businessmen, on being asked why they do not expand their output, often reply: "*I* don't want to work any harder!" A second result is that British business relies for direct supervision on foremen with limited education, who are recruited from the workers' ranks but are not usually considered part of management or candidates for managerial posts. Consequently there is a relatively sharp distinction between management and labor; a British firm, for example, is likely to have a Workers' Club separate from any facilities provided for management—rather like the Army distinction between officers and GI's. In contrast, American firms think twice before providing recreation facilities that are not open to all. In short, on a broad basis, what has been called the "managerial revolution"—under which management is entrusted to those with ability but with little or no stock ownership—has made considerably slower progress in Great Britain than in the United States, partly because the group from whom managers can be recruited is relatively limited. In consequence, British firms tend to be run by the second and third generation of the founding family to a noticeably greater extent than in the United States—even when the interests of the younger generation have shifted from business and its abilities have declined.

### Socialism and Social Immobility

Why has the British sort of social organization promoted socialism? When Hugh Gaitskell, the present leader of the Labour party, was once asked why he became a socialist, his reply was: "I am socialist because I hate and loathe social injustice, because I hate the class structure that disfigures our society, because I hate poverty and squalor. I want to see a society in which rewards go according to merit."[2] Note the emphasis on "class structure": from the viewpoint of a Welsh miner or a London docker the British system has been one under which he and his children seemed endlessly condemned to support a monolithic ruling and owning class to which he had no opportunity whatsoever of belonging. Nothing short of a complete change in the system seemed to offer any hope of getting the bosses off his back and providing his children with an opportunity to realize their potentialities. Of the two perhaps the burden of the bosses was more important. We know from polls that the average man vastly overestimates the importance of profits; without a doubt nothing has been more disappointing to British socialists than to have to recognize after industries had been nationalized how small a contribution the elimination of profits made to raising the living level of the masses. But now that this has had to be faced, one of the strongest remaining appeals of socialism is that it appears to be the only way that the children of a man with a cockney accent can look forward to the recognition to which their ability entitles them—in short, the only way in which reasonable equality of opportunity can be achieved.

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[1] Frederick Harbison, *Quarterly Journal of Economics,* August, 1956.

[2] More recently, in outlining to the 1958 Labour party conference the "modern society" Labour seeks to create, Gaitskell described it as free of "servility and snobbery" and based on "freedom, security, and equality" (*The New York Times,* October 2, 1958, p. 10).

Gaitskell's emphasis on "rewards according to merit" is the reverse side of the same coin. For British socialists are by and large convinced that economic rewards under free enterprise reflect not ability, but luck and inheritance. In this they are, of course, backed up by the whole aristocratic emphasis on the "accident of birth"—a matter about which even the ablest man can do nothing once he has chosen his parents. Certainly the highly progressive income tax favored by socialists reflects a belief in the undeserved character of large incomes; and equally the highly progressive inheritance tax is an effort to reduce the importance of hereditary wealth. The difficulty is that, as neither gifts nor capital gains are subject to taxation under British laws, a man of inherited wealth willing to invest in growth industries and give his assets to his children five years before his death can rather easily preserve his family's fortune. And the very progressiveness of the income taxes with which socialists seek to reduce inequality makes it extremely difficult for anyone, no matter how able he may be, to acquire wealth if he starts without it—and the inability to achieve wealth, in turn, diminishes the very social mobility the socialists are so anxious to promote.

In short, resentment of rigid class lines has been important in explaining the acceptance of socialism and highly progressive taxation, but modification of the existing situation has proved difficult. Systematic taxation of expenditure and capital transfers (rather than income) may well be required if the pattern of consumption is to be made to correspond closely to current contributions to production.

In contrast to Great Britain, the United States has never had an aristocracy. There has, of course, been much discrimination on various grounds—against successive waves of immigrants, against Jews, and against Negroes. But such *class* structure as has existed has been predominantly "plutocratic"—based on the possession of income and wealth rather than birth or landownership. The lines themselves are not tightly drawn; if there ever was a select group of 400 socialites in New York City as was once alleged, the list has long since been expanded to include anyone with the price of admission to a fashionable café. In fact, there are those who believe that inherited wealth is an obstacle to reaching a top position in management; corporations are said to feel that those with independent means are likely to be lacking in dedication to the interests of the corporation. Many corporations, in fact, have hard and fast rules against nepotism—though having a father who is president probably on balance still improves a man's prospects for employment and advancement. In short, social mobility upward—from the masses to the classes—has generally been relatively easy. There was little surprise, for example, when it became known that LeRoy Curtice had retired from General Motors on a pension of $63 a month after serving twenty-eight years as a paint-and-metal inspector in the same year that his brother received $775,000 as president of the company.

Perhaps equally important is the fact that *exit* from the American plutocracy also takes place easily. By and large this is not the result of social policy; inheritance taxes remain at relatively low levels. Long-run inflation and restrictions on perpetual trusts have played a role: only in Boston has the professional trustee had some success in preserving for several generations a class whose economic *raison d'être* had ceased to exist. Also important has been an environment in which a father's obligation is to provide an education to enable his son to make a living rather than to provide the living. But the flexible, expanding, and dynamic character of American society has undoubtedly been most important of all. There has never been a time when there were not more posts open at the top than could be filled by the sons of those already at the top. In commenting on American social mobility, Professor David McCord Wright has said: "The ideal is a society kept sufficiently decentralized and competitive so that the less able will drop out of the upper income groups while new recruits of the more able appear from below. . . . [Although] most Americans have believed in giving men freedom to rise, they have not believed in letting things be too comfortable for the successful *after* they have risen. . . . [With society] kept reasonably flexible and mobile, envy of the more successful has not been very respectable in America. . . . And our relative absence of envy tends to be reflected in greater enterprise and growth."[3] In other words, "fair shares" are much less a problem if it is felt that the shares are received as the result of merit rather than accident—and this in turn tends to stimulate effort and development.

Finally, it may well be that there is an important relationship between the social organization in Great Britain and the character of competition. Achieving a position in an aristocratic world may well have absorbed only a small part of the energies of the original entrepreneur; but the effect on the second generation, after it had acquired aristocratic values, has certainly been significant. Even when not attracted from business to more "acceptable" occupations, the second generation has found that the world of which it seeks to be a part thinks of business merely as a source of income, so that innovation and the resulting intensification of competition offer at best little prestige and at worst are open to the devastating charge of being "ungentlemanly conduct." Under the circumstances a market-sharing agreement—to provide both more income and more time for hunting—may well be the statesmanlike solution!

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[3] *Fortune,* February, 1957.

## Some Concluding Qualifications

It is essential to stress the tentative and illustrative character of the generalizations that have just been presented. They are suggestions offered—by an economist in territory claimed by sociologists—only because purely economic explanations seem inadequate to account in full for either the greater acceptance of socialism or the slower rate of economic development in Great Britain compared with the United States. Although it seems quite unlikely that any amount of additional work will be able to explain the differences in purely economic terms, further research will certainly bring forward many factors that have not been considered in this brief chapter. To repeat what was said in the introductory section, the purpose of the chapter has been to provide some *examples* of the impact on economic development of influences broader than those normally included in the term "economic." Although it obviously would be desirable to be able to cover such influences systematically and completely, as yet we simply do not have either the information or the understanding to do so. Because the discussion has been no more than illustrative and our present knowledge of what is involved is severely limited, it is perfectly possible that the emphasis of this chapter on British deficiencies will turn out to be exaggerated—though the slower rate of British development is a fact that will continue to need explanation. But if this chapter has succeeded in making clear that a full understanding of the factors influencing economic development inevitably reaches beyond economics into other fields, it will have achieved its primary purpose.

# PART III Development under Communism

## 36 The Russian Background

### Dictatorship and Communism

In this section we are primarily interested in economic development—and therefore in the actual achievements of the Soviet Union. We shall want to keep very much in mind the fact that the Soviet regime is a dictatorship. For it will be argued in what follows that government ownership in itself by no means guarantees more rapid economic development; it is the actual decisions made that count. Thus, if a dictatorial Communism is able to achieve rapid development by devoting large sums to research and capital formation at the expense of the present generation in a way that would be quite impossible under democracy, the credit belongs, not to the existence of government ownership, but to the existence of dictatorship. Equally, if Russian development has been slowed down by the havoc wrought by Hitler's invasion, the result cannot fairly be blamed on Communism.

To provide a background against which to appraise the Soviet Union's achievements, this chapter will be devoted to a short summary of Russian economic history since the Communist Revolution. Attention will be concentrated entirely on the Soviet Union not only because the achievements of Soviet Communism can only be appraised against the specific difficulties faced by the regime but also because the Soviet Union represents the outstanding example of a Communist regime.

### Achievement versus Cost

In what follows there will appear much that is favorable regarding the economic achievements of the Soviet Union. These achievements have, however, been attained at an immense cost in human suffering. There are three reasons why this human cost will not be stressed. First, to the extent that we are in an economic struggle with the Soviet Union, it is results rather than costs that count. The fact, for example, that Soviet aid to underdeveloped countries may be made available by holding down the Russian level of living is likely to be of extraordinarily small interest to an Afghan, whose living level is very much lower than that in the Soviet Union. Second, costs in human suffering that appear utterly prohibitive to one brought up in the Western tradition, with its emphasis on the importance of the individual, have little or no meaning to the considerable majority of humanity who live in countries where human life remains "cheap" and the death rate high as a result of malnutrition and dietary-deficiency diseases—if not outright starvation. Third, human costs will not be stressed to avoid repetition. Let me at this point make it clear, once and for all, that the achievements of the Soviet Union—impressive as they may be—have been won at a cost in human suffering that, in my judgment, has been both unnecessary and staggeringly high. With this overall judgment in mind, let us turn to a rapid summary of recent Russian economic history.

### War and Revolution

Though progress had been made, at the time of World War I Russian economic development had a long way to go. Four fifths of the population were peasant cultivators, perhaps a fifth of whom were so poor that they did not have draft animals but worked their land entirely by hand. Although there were a significant number of urban industrial workers, the "middle class" of professionals, businessmen, and technicians was subordinate to an autocratic group of aristocrats, landowners, and bureaucrats which had successfully opposed all efforts at liberalizing the regime politically—so much so that when, shortly before the revolution, the suggestion was made to the Czar that he should take steps to win the confidence of his people, he could reply: "Surely it is for the people by their conduct to merit my confidence!"

Although the overwhelming proportion of German military strength throughout World War I was deployed on the Western front, after three years of fighting, the Russian Army was reduced to a state verging on collapse. Largely for this reason the Czar was overthrown in March, 1917, in a revolution led by moderates and pledged to a continuance of the war. But during 1917, conditions, especially in the cities, continued to deteriorate. As a result the Bolsheviks, a small but well-organized revolutionary group under the leadership of Lenin, who drew their support from the industrial workers and believed with Marx in the necessity for a dictatorship of the proletariat, were able to seize power from numerically larger, but disorganized, moderate elements. The slogan of the Bolsheviks was "Land, Bread, and Peace"—a prophetic slogan because, although they did sue for peace and try to provide bread, the Bolsheviks had no ultimate intention of making land available for peasant ownership. Hence it represented the first, but by no means the last, time the Bolsheviks concealed their ultimate purpose to obtain immediate advantage. Once in power the Bolsheviks ruthlessly but efficiently consolidated their position, so that by the middle of 1918 they were in substantial control of the entire country.

As it became increasingly clear that Germany would be defeated, arms from Allied sources reached various White Russian forces opposed to the revolution, and late in 1918 American, French, and British soldiers landed at Archangel and American and Japanese forces at Vladivostok. This forced the Communists to concentrate on developing the Red Army, which was done with remarkable efficiency under the leadership of Trotsky. When it became obvious that a major campaign would be required to overthrow the Communists, the Allied forces, which had never clearly formulated what they wished to accomplish, withdrew, and by 1920 all remaining organized opposition had been eliminated. The price paid for the civil war in terms of economic disorganization was, however, immense. Output of large-scale industry is estimated to have fallen to 14 percent of the 1913 level; agricultural output declined to the point at which starvation was widespread. It is important to keep in mind that the Communists believe—and to an unfortunate extent believe correctly—that had it not been for direct Allied intervention and indirect aid to the White Russian forces, the major part of the destruction of the revolution would have been avoided and reconstruction started two years sooner.

## The New Economic Policy

Not only had production largely collapsed because the Communists had been too busy to develop techniques to implement the nationalization of industry, but the bitterness developed during the civil war had driven a large part of the professional and managerial group into exile. Organizing nationalized industry and replacing the departed technicians could not be done at once. Continuing collapse was averted by a massive strategic retreat called the New Economic Policy. Under it around 40 percent of Russian industry was returned to private control—especially light industry, distribution, and retailing. At the same time, to reverse the sharp reduction in acreage under cultivation as a result of grain "requisitions" during the civil war, peasants were confirmed in the possession of the land they held or had seized (though title was technically vested in the state), and were promised unhindered exchange of their products for those of industry. Transport, utilities, and basic industry, however, remained nationalized. On the political side the period was marked by the death of Lenin and the struggle between Trotsky and Stalin to succeed him. An issue in the struggle was whether immediate world revolution was necessary to safeguard the Soviet Union against renewed capitalist aggression. The triumph of Stalin was in part a triumph of the belief that the "building of socialism" was possible within a single country even though the rest of the world remained capitalistic.

During the period of the New Economic Policy, which extended to the inauguration of the First Five Year Plan in 1928, two main things were accomplished on the economic front: planning techniques were developed to permit the operation of the industry that remained nationalized, and a rapid expansion of education was undertaken to replace the technicians lost during the civil war. In terms of the problems of underdeveloped countries, the length of time required by Russia to develop trained personnel is worth noting. So difficult was the situation that higher education was made available only to the sons of peasants and workers; all others were excluded on the ground that their class background raised questions regarding their loyalty to the regime. Overall, during the period of the New Economic Policy, the Communist regime was able to consolidate its position, but by 1928 it had made little progress; the level of production was approximately that prevailing before the war in 1913.

### The First Five Year Plan

The First Five Year Plan had three objectives: nationalization, collectivization, and industrialization. The first represented simply the liquidation of the New Economic Policy. By the end of the period—formally January, 1933—private ownership of the means of production had been completely eliminated. With the exception of collectives in agriculture and producer cooperatives (especially in retailing), ownership was vested directly in the state and formal planning was extended to almost all economic activity.

Elimination of private ownership elsewhere was easy compared to the collectivization of agriculture. Clearly *some* reorganization was necessary. Holdings were so small that the individual farmer by himself could not possibly own and use modern agricultural machinery. In fact, so divided were the individual holdings that the land lying fallow to separate them could, it was estimated in 1928, have grown enough grain to feed Moscow. And we have already noted that the poorer peasants did not even have draft animals. Originally the Plan called for only gradual organization into "collectives"—a sort of cooperative in which land and tools, including livestock and draft animals, are pooled and workers receive a share of the common output based on the value of the work they contribute. But in the enthusiasm generated by the Plan the targets were greatly expanded, provoking violent peasant opposition. Partly this took the form of the slaughter of livestock, including draft animals; but it culminated in a sharp reduction in the acreage seeded in 1932, followed by a partial crop failure. The result was widespread starvation. Although the exact number will never be known, as vital statistics for the period have been suppressed, estimates of deaths from starvation range from 2 million to 10 million—the latter figure equal to half the total Russian casualties in World War II. Even Stalin confessed, in a conversation with Churchill, that he was not proud of what had happened. But if the cost appears high—and almost certainly unnecessary—collectivization did serve to reorganize landholdings so as to make the use of modern machinery possible, which in turn permitted a sharp reduction in the percentage of the labor force in agriculture.

To make rapid industrialization possible without a decline in living levels, the First Five Year Plan counted on sharp increases in productivity in the industrial sector of the economy. These were not in fact realized. Rather than slow the development of the heavy industry provided for in the Plan, production of consumer goods was allowed to decline to the point at which price control and rationing became necessary. As the Plan was revised both upward and downward frequently, whether it was "fulfilled" is of little consequence; what it did clearly achieve was to lay the foundation for the Soviet Union's subsequent rapid industrial development.

## Hitler and the Second and Third Five Year Plans

The Second Five Year Plan, which started in 1933, stressed an expansion of consumption. Peasants were permitted to farm "garden plots" assigned them by the collective and sell freely any surplus they were able to produce. Production of consumer goods was increased, and by 1935 supplies were sufficiently plentiful that rationing and price control were discontinued. More broadly, Russia had by then received widespread diplomatic recognition, the regime felt secure enough to make higher education available even to those whose class background was suspect, the draft of what appeared to be a liberal constitution had been circulated, and there is evidence that the powers of the secret police were being reduced. Among historical speculations few are more fascinating than those on what "might have been" if these tendencies had continued. But the threat that Hitler represented had apparently become clear to Stalin by 1936. Evidence that the threat was recognized is provided by the sudden change that occurred in the treatment of abortion, which had been guaranteed as a personal right in the draft of the constitution circulated in 1935 but was suppressed before the constitution was actually enacted in 1936—presumably in recognition of the importance of a high birth rate in offsetting war losses. (Abortion was made legal again in 1955.)

As a result, halfway through the Second Five Year Plan the emphasis on consumption decreased and the emphasis on capital formation, particularly in the area east of the Urals, and, above all, on production for defense increased greatly. Moreover, the Third Five Year Plan, which started in 1938, continued this shift in emphasis. Defense, which had absorbed only 3 percent of the national income in 1928, took 8 percent in 1937 and 16 percent in 1940. Even capital formation, which had risen from 15 percent in 1928 to 21 percent in 1937, fell back to 14 percent in 1940.[1] As a consequence the level of living fell appreciably. To the many Communists who believed that socialism would bring rising living levels for the workers, the reversal was a bitter blow. Widespread unrest resulted, especially among old Communists, culminating in the purges of 1937 and the strengthening of the secret police and Stalin's dictatorship. But economically the five years between 1936 and 1941, when Hitler invaded the Soviet Union, were responsible not only for substantial military production, but also for the creation of an industrial base east of the Urals, which to a major extent explains why the Soviet Union was able to maintain military production at a high level during World War II despite Hitler's conquest of so large a part of Russia's original industrial area.

## The War Achievement

In World War I the Russian Army, after absorbing a minor part of the German war effort, virtually collapsed in three years. Little more than a quarter century later, after three years of war, the German Army was in full retreat before a Russian Army that had absorbed the major part—perhaps 75 or 80 percent—of a greatly expanded war effort. There have been few more dramatic reversals in history; yet so little was the change anticipated that, at the start of Hitler's invasion, an outstanding American military expert on Russia was widely quoted as saying: "Only an act of God will allow the Russian Army to hold out for more than six weeks." Note that the German Army was in full retreat in Russia before the Normandy landings and before Allied bombing had achieved any significant impact on the German war effort. Although goods supplied Russia under Lend-Lease undoubtedly helped, only in the case of trucks, where perhaps half of those in military use were Lend-Leased, was a military item provided in significant quantity. In fact, it is estimated that Russia produced five times as many mortars, twice as many cannon, and somewhat more tanks than did America.[2] Moreover, Russian tanks were considered by the Germans to be the best produced by any nation, Germany included. Finally, the military results almost certainly do not accurately reflect the Russian *production* achievement. For the initial German successes appear to have been achieved far more by superior military organization than by superior military matériel.

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[1] For details, see Table 37-5.

Russia's military achievement is stressed in this volume devoted to economic development because the statistics measuring Russia's economic achievements are complicated and for many do not carry conviction. But in the competition of actual war, statistical tricks are of no help. We shall see, when we analyze the Russian economy more fully in the next chapter, that Russian military accomplishments were made possible only through considerable "distortion" of the economy and at a heavy price in terms of consumer goods forgone. But the war clearly demonstrated that the planned and nationalized economy of the Soviet Union was capable of organizing its resources to achieve a concrete end such as military strength. This Hitler did not understand—probably because his intelligence was no better than ours. It would seem unfortunate to repeat his mistake.

## The Postwar Recovery

Perhaps the most important point to be made about postwar recoveries—both in Russia and elsewhere—is that they are not representative. The destruction of capital by the Germans was immense and production, especially of consumer goods, had by 1945 fallen to a low level. One estimate is that one third of Russian industry was "destroyed" in the course of the war.[3] But the rate of recovery could be expected to be,

[2] Edward Ames, *Proceedings of the American Economic Association,* May, 1951.

[3] Ellsworth Raymond, *Soviet Economic Progress* (New York: Holt, Rinehart and Winston, Inc., 1957).

and was in fact, rapid. For wartime "destruction" is rarely complete: a railroad can be rendered inoperative by blowing its bridges or a power plant by destroying its generators. The economic effort involved, however, in replacing bridges and generators is nowhere near as great as building the railroad or the power plant from scratch. The smaller effort shows up in a quite abnormally rapid increase in production, which continues until all the partially destroyed capital is put back into use. The result in the Russian case is that, up to about 1950, rates of increase in production and income are of little significance. Achievements since that date are more important and will be examined more fully in the chapter that follows.

What emerges from this brief outline of Russian economic history? Let us first stress what may appear obvious: the Soviet Union has demonstrated that an economy with practically complete government ownership of the means of production can survive in the face of considerable difficulties and—cost aside—can achieve at least the priority objectives of its leadership. If today this may not seem like much of a conclusion, it should be recalled that numerous economists in the past predicted that planned economies would fall of their own weight. As soon, however, as we try to go further, we run into difficulties. Suppose, for example, we look for a time in which to measure the "normal" rate of development of the Russian economy. At the outside, the thirteen years between 1928 and 1941 and the period since 1950 appear to qualify. But during the first period occurred the perhaps inevitable difficulties involved in the initial efforts at large-scale planning and industrialization and the perhaps quite avoidable waste resulting from the way in which collectivization was achieved. And toward the end of the period there were the difficulties caused by the rapid change during the Second and Third Five Year Plans from emphasis on consumption and capital formation to heavy stress on military preparations. Only during three or four years of the period—perhaps from 1933 to some time in 1936—was the Communist leadership seriously interested in raising living levels. Obviously under such circumstances the idea of a "normal" rate of development has a rather special meaning. This is not, of course, to deny that the performance of other economies has also been marred by wars, mistaken economic policies, and severe depressions. Rather, the point to be stressed is that projections into the future on the basis of past performance, as well as comparisons between economies, are valid only to the extent that underlying conditions are in some sense similar. The outline of Russian economic history just concluded should therefore be of help to us when, in the next chapter, we consider the future prospects of the Russian economy.

# 37

# What Russia Has Accomplished

## Introduction

Describing Russian accomplishments is rather like the problem facing the blind men who tried to describe an elephant: what they found depended on the part of the beast they happened to bump into. The problem of description is made even more difficult because the Soviet economy is grossly "distorted" in comparison with a "normal" Western economy. The essence of the matter is that the Communist leadership has shown remarkable ability to achieve its priority objectives: industrialization and military strength. But Communism works no miracles; achievement of these priority objectives has inevitably been paid for by slow development elsewhere. Hence it is easy—by looking at priority areas—to prove that the Soviet Union is doing brilliantly, and equally easy—by looking at areas the Communists consider unimportant—to prove that Russia's accomplishments are appallingly bad.

We are dealing with an economy whose overall industrial production is not much more than a third that of the United States. Yet it is an economy that has produced "not only large, well-equipped conventional military forces, but also nuclear-weapon delivery systems which are at least technologically equal to those of the West, and in some cases possibly superior"; that has "the world's largest submarine fleet, a surface navy second only to the American, and an air force numerically superior to that of the United States"; and which produces 50 percent as much steel, 80 percent as much coal, and 20 percent more machine tools by value and even more by number than are produced in the United States.[1] And it is equally an economy whose production of consumer durables such as automobiles, refrigerators, and washing machines is minuscule—perhaps 2 to 4 percent of the American level—and which provides its inhabitants with the worst housing in Europe—even worse than is available in Bulgaria. *Fortune* tried to translate this strange mixture into American terms as follows: "Imagine that the U. S. had an air-nuclear striking power equivalent to what we had, say, two years ago. But imagine U. S. heavy industry where it was thirty years ago. Now imagine that most of the U. S. nonfarm labor force, other than government employees, is working forty-six hours a week in crowded and dirty factories or on heavy construction, for less real pay than it got in 1928, and for a lower standard of housing than it had in 1913. And finally imagine that half of all Americans are still living and working on farms as they were seventy-five years ago, for a living standard even lower than that of the city people."[2] The part of the elephant we happen to bump into obviously does make a difference!

What we shall attempt to do in this chapter is, first, to present some statistical evidence regarding the broad changes that have occurred under Communist planning; second, to attempt some interpretation of the implications of these changes; and, finally, to speculate regarding future prospects for the Soviet regime. Because statistics regarding economic accomplishments are of possible military importance, until quite recently the Soviet Union withheld much economic information; even today much less is available than for most other countries. On the other hand, considerable effort has been put into studying Russian accomplishments, and there is general agreement among students of the Soviet economy that the *basic* statistics are not falsified—undoubtedly because to do so would make planning almost impossible. Problems develop when attempts are made to combine individual series into overall measures to determine the total performance of the economy. For a variety of reasons the combined measures prepared by Soviet statisticians are seriously misleading—perhaps deliberately so. Let us start, therefore, with some basic series measuring physical production and then present some overall estimates made by Western scholars to shed light on the total performance of the Soviet economy.

[1] Committee for Economic Development, *Soviet Progress vs. American Enterprise* (Garden City, N. Y.: Doubleday & Company, 1958), pp. 83–84; and Ellsworth Raymond, *Soviet Economic Progress* (New York: Holt, Rinehart and Winston, Inc., 1957), p. 43.

[2] *Fortune,* February, 1957, p. 93.

## Measures of Physical Production

The two tables that follow demonstrate forcibly the uneven character of Russian development. Table 37-1 illustrates the sharp expansion of producers' goods as a result of rapid industrialization. Probably coal and steel—the basic fuel and the basic metal—are most important; each increased more than fourteenfold from 1928 to 1960. It is this sort of performance that makes the Soviet example so obviously attractive to underdeveloped countries and gives weight to the boast that Communism is achieving in one generation what capitalism took a century to accomplish.

### TABLE 37-1

### Production of Producers' Goods

| | 1913 | 1928 | 1932 | 1937 | 1940 | 1945 | 1950 | 1955 | 1960 |
|---|---|---|---|---|---|---|---|---|---|
| Coal [a] | 29 | 35 | 64 | 128 | 166 | 149 | 261 | 391 | 513 |
| Oil [a] | 9 | 12 | 21 | 29 | 31 | 19 | 38 | 71 | 148 |
| Steel [a] | 4 | 4 | 6 | 18 | 18 | 12 | 27 | 45 | 65 |
| Electric Power [b] | 2 | 5 | 14 | 36 | 48 | 43 | 91 | 170 | 292 |

[a] Millions of metric tons
[b] Billions of kilowatt hours

SOURCE: 1913–1955 from *Promyshlennost' SSSR* (Moscow: 1957), pp. 40 ff; 1960 from *Ekonomicheskaia Gazeta,* January 26, 1961. The increase in coal production somewhat overstates the increase in energy achieved because the percentage of lignite, with a lower caloric value, increased from 4 percent in 1913 and 9 percent in 1928 to around 30 percent of total coal output in 1955.

The rapid expansion of producers' goods is quite different from the behavior of consumers' goods, summarized in Table 37-2. True, between 1928 and 1960 wool fabrics and footwear increased fivefold and sevenfold; but the quantitatively far more important cotton fabrics did not even double. Further, basic agricultural production expanded relatively little. Cattle population, slow to recover from the slaughter that accompanied collectivization, was only a little larger in 1960 than in 1928, and flour production had increased by under one half—little more than the increase in population. Only hog population appears to have increased significantly. Overall it is obvious that consumers' goods—especially agricultural products—have shown no such dramatic increase as occurred in the case of producers' goods.

### TABLE 37-2

### Production of Consumers' Goods

| | 1913 | 1928 | 1932 | 1937 | 1940 | 1945 | 1950 | 1955 | 1960 |
|---|---|---|---|---|---|---|---|---|---|
| Cotton fabrics [a] | 26 | 27 | 27 | 34 | 40 | 16 | 39 | 59 | 48 |
| Wool fabrics [b] | 103 | 87 | 89 | 108 | 120 | 54 | 155 | 252 | 439 |
| Footwear [c] | 60 | 58 | 87 | 183 | 211 | 63 | 203 | 271 | 418 |
| Flour [d] | 28 | 24 | — [g] | 28 | 29 | 15 | 22 | 32 | 35 [i] |
| Cattle population [e] | 52 [f] | 60 | 38 | 48 | 48 | 48 [h] | 58 | 57 | 74 |
| Hog population [e] | 17 [f] | 22 | 11 | 20 | 23 | 11 [h] | 22 | 31 | 53 |

[a] Hundred million meters [b] Million meters [c] Million pairs [d] Million tons [e] Million head at the beginning of the year [f] Year 1916 [g] Not available [h] Year 1946 [i] Year 1959.

SOURCE: 1913–1955 from *Narodnoe Khoziaistvo SSSR v 1959* (Moscow: 1960), pp. 246, 262, and 382; 1960 from *Ekonomicheskaia Gazeta,* January 26, 1961.

## Distribution of the Labor Force

How can we go beyond the production of individual commodities to get at the overall distribution of the Russian productive effort? One way is to look at the distribution of the labor force. With the rapid industrialization and urbanization after 1926, the percentage in the labor force declined but the total number increased by 4 million. All this increase, plus 15 million more released from agriculture in the course of collectivization, were absorbed into nonagricultural employment, which had almost tripled by 1939. This trend was resumed after the war, so that by 1959 another 27 million had been added to nonagricultural employment, causing the proportion of such employment to the labor force to reach 58 percent—or almost four and a half times the 1926 level, as is made clear in Table 37-3. Of the increase since 1939, 14 million came from the reduction in agricultural employment, 9 million from the increase in the labor force, and 4 million from the decline in "other" employment (which includes the army, forced labor camps, and the like). From the long-run point of view, a study that used somewhat different concepts from those just presented concluded that the percentage of nonagricultural employment in relation to the total population was higher in the United States in 1820 than it was in the Soviet Union in 1928; but twenty-two years later, in 1950, the percentage had risen to the level the United States had attained in 1880.[3]

Two things appear clear: Russia is a long way from being industrialized by the standards of countries such as Great Britain or the

[3] A. David Redding, *Review of Economics and Statistics,* November, 1954.

### TABLE 37-3

### Distribution of the Labor Force

(In millions except percentages)

| | 1926 | 1939 | 1959 |
|---|---|---|---|
| Nonagricultural employment | 11 | 30 | 57 |
| Agricultural employment | 70 | 52 | 38 |
| Other employment | 5 | 8 | 4 |
| Total labor force | 86 | 90 | 99 |
| Population | 147 | 170 | 209 |
| Nonagricultural employment as percentage of labor force | 13 | 33 | 58 |

SOURCE: Estimates for 1926 from Warren W. Eason, "Population and Labor Force," contained in *Soviet Economic Growth,* edited by Abram Bergson (Evanston, Ill.: Row, Peterson & Company, 1953), Table 3.2 (with the "residual labor force" in 1939 distributed half to Agricultural and half to Other Employment); estimates for 1959 derived from Soviet Census reports published in *Vestnik Statistiki* (Moscow: 1960), vol. 12, pp. 4 ff.

United States; but, equally, progress in that direction has been, and continues to be, made at an unusually rapid rate.

The distribution within the nonagricultural total, summarized in Table 37-4, again reflects the Russian emphasis on industry and construction. Even more remarkable is the fact that, on the one hand, twice as

### TABLE 37-4

### Distribution of Nonagricultural Employment in the Soviet Union and the United States

(In percentages)

| | SOVIET UNION | | | UNITED STATES | |
|---|---|---|---|---|---|
| | 1937 | 1955 | 1959 | 1900 | 1950 |
| Industry and construction | 55 | 54 | 54 | 38 | 39 |
| Transportation and communications | 11 | 10 | 12 | 11 | 8 |
| Trade | 9 | 9 | 9 | 19 | 22 |
| Education | 8 | 10 | 17[a] | 3 | 4 |
| Other | 17 | 17 | 8 | 29 | 27 |

[a] Including public health.

SOURCE: Estimates for the United States from A. David Redding, *Review of Economics and Statistics,* November, 1954. Estimates for the Soviet Union for 1937 and 1955 from *Narodnoe Khoziaistvo* (Moscow: 1956), pp. 187 and 190, and for 1959 from *Narodnoe Khoziaistvo SSSR v 1959* (Moscow: 1960), p. 583.

large a percentage of the labor force is engaged in trade in the United States as in the Soviet Union, while, on the other hand, the Soviet Union is devoting a percentage to education that even in 1955 was two and a half times larger than ours. By all accounts service in Russian stores is atrocious, and there is no doubt that the multiplication of retail outlets adds much to the convenience of life in the United States. It is nonetheless hard not to be concerned about the ultimate impact of the relative distribution of effort.

### Behavior of the National Income

Further revealing light on the overall behavior of the Russian economy is provided by information on the way in which the Russian national income has been used, which is summarized in Table 37-5. Social services represent a type of consumption, but even consumption and social services taken together have steadily declined from 79 percent in 1928 to 56 percent in 1953. Put the other way round, more and more of the increasing productive capacity of the Soviet Union has been devoted to defense and net capital formation, which have risen from 18 percent at the start to 40 percent at the end of the period. The behavior of defense is worth noting. Despite the fact that foreign troops had left Russian soil only eight years previously, defense expenditures in 1928 were quite small, and in 1937, when the menace of Hitler had been recognized, the percentage was still relatively low. Hence the high level that prevailed in 1953 is noteworthy both for the light that it casts on the objectives of the present Russian leadership and as an indication of the increase in net investment that would be possible without lowering consumption standards if military preparations were reduced.

TABLE 37-5

Uses of the National Income

(In percentages)

| | 1928 | 1937 | 1940 | 1953 |
|---|---|---|---|---|
| Consumption | 73 | 57 | 57 | 48 |
| Social services | 6 | 11 | 9 | 8 |
| Administration | 3 | 3 | 4 | 4 |
| Defense | 3 | 8 | 16 | 16 |
| Net capital formation | 15 | 21 | 14 | 24 |

SOURCE: M. C. Kaser, *Economic Journal,* March, 1957, Table III.

Of even more interest than the uses to which the national income has been put is the rate at which it has been increasing. As the previous chapter made clear, the exact period for which measurement is made has an overriding influence on the results, and even for the same period there is disagreement among foreign scholars. The consensus, however, appears to be that the rate of increase during the two periods running from the start of the First Five Year Plan in 1928 to 1941 and after 1950, when recovery from the war had been substantially completed, has been between 6 and 7 percent a year.[4] These estimates are for the total, rather than the per person, increase in income; hence they are influenced by the rate of population growth, which makes comparisons with other countries difficult in view of the fact that the effect of population growth on the increase in output is not fully understood. But if we look at the behavior of total income in the United States as reported in Table 28-2, it appears that the Soviet rate of increase in income *for the years selected* was broadly rather more than twice the American rate between 1910 and 1950 and rather less than twice our rate between 1950 and 1960—though definitely more than twice our rate during the last five years.

## The Importance of the Time Period Chosen

Note again that the periods chosen for determining the rate of growth of Soviet income just presented were those during which growth was most rapid. Widely different conclusions could follow if less favorable periods were used. For example, a careful study has been made of the extent to which representative industries in the Soviet Union lag behind their American equivalents; this sort of study eliminates problems involved in combining individual series.[5] Table 37-6 presents results for the industries covered in Table 37-1. Thus Russian steel production in 1913 was roughly equal to American steel production in 1892, or 21 years earlier. By 1937 the lag had increased to 32 years and by 1955 it was 29 years—higher than it had been in 1913. For all thirty-seven industries studied, the median lag was 28 years in 1913, 36 years in 1937, and 35 years in 1955. Moreover, comparisons of production per person are even more unfavorable to the Soviet Union in view of the more rapid Russian population growth.

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[4] M. C. Kaser, *Economic Journal,* March, 1957, Table I summarizes estimates for the earlier period. Only Colin Clark diverges significantly from an estimate in the vicinity of 7 percent. For the latter period, in addition to the Block estimate cited by Kaser, the 6 percent figure has come to be widely accepted.

[5] G. Warren Nutter, *Occasional Paper 55* (New York: National Bureau of Economic Research, 1957).

TABLE 37-6

Lag of Soviet Production behind American Production

(In years)

| | 1913 | 1937 | 1955 |
|---|---|---|---|
| Coal | 45 | 49 | 47 |
| Oil | 14 | 26 | 34 |
| Steel | 21 | 32 | 29 |
| Electric power | 13 | 21 | 16 |
| Median for all industries studied | 28 | 36 | 35 |

SOURCE: G. Warren Nutter, *Occasional Paper 55* (New York: National Bureau of Economic Research, 1957).

Which is "correct": the fact that Russian industry was further behind the United States in 1955 than in 1913, or that Russian income has been increasing at least 50 percent more rapidly than ours? The answer is that both are "correct"—the one for a 42-year period and the other for a selected period within the total. But which is relevant when we come to consider Russia's future prospects? If we anticipate two devastating wars and a revolution in the next 42 years of Russia's history, the rate of Soviet development over the longer period is certainly the one to use. But if we anticipate a continuance of the peacetime conditions that prevailed during the selected period, then the rate attained during that period would appear to be more relevant.

### Prospects for the Future

But even with continuing peace, is it probable that the Soviet Union will be able to maintain the high rate of development it has achieved in selected past periods? Obviously no final answer is possible; in fact, the answer depends in part upon the factors responsible for the rapidity of Russian development discussed in the chapter to follow. But certain aspects of the matter can usefully be considered at this point in connection with the character of Russian accomplishments.

Let us start by stressing, first, that the 6 percent rate of increase in Russian income is *not* the rate of increase in the priority or favored areas of the economy; rather, it is the rate of increase for the economy as a whole, *taking the good with the bad.* Second, the Soviet Union did *not* concentrate on the "easy" areas of the economy and develop them first; instead, Russia concentrated on heavy industry, which is certainly one of the more difficult areas to expand. The fact that certain areas—such as agriculture—are behind in itself proves nothing; to demonstrate that Russian development must slow down, it is necessary to demonstrate that, when Russia turns to agriculture, it will be *harder* to develop than was heavy industry. This is a point to which we will shortly return. Finally, there is little to be said for the argument that countries always develop most rapidly at the start of their development. Table 28-2 makes clear that this simply has not been true for the United States. It has been true for individual American industries and it may have been true for the British economy as a whole. But there is no convincing evidence of any slowing down in the overall growth rate of the American economy—and therefore no basis for assuming that the rate of growth of the Soviet economy will necessarily or automatically slow down.

A second broad consideration to be borne in mind is that rapid growth has certain aspects that make it likely to be self-perpetuating. Suppose we assume that American real income increases at no more than 3 percent annually starting in 1950; it will then have doubled by 1975. If such growth is accompanied by a continuance of the same distribution between consumption and other uses of income that has prevailed recently, we would achieve the results summarized in Table 37-7. Suppose during the same period that Russian income continued to grow at a 6 percent rate from a level one third that of the United States. Under such circumstances, despite the fact that Russian income would have doubled twice for a fourfold increase by 1975, it would still be only two thirds of the American level—and even less if American income was to increase faster than at the assumed 3 percent rate. But if we assume that Russian consumption is currently 50 percent of total production—Table 37-5 suggests that direct consumption, at least, is even less—then consumption in the Soviet Union can double over the next twenty-five years *and still permit a sixfold expansion in other production!* In other words, it is

TABLE 37-7

Assumed Russian and American Development

| | 1950 | 1975 |
|---|---|---|
| United States | 100 | 200 |
| Consumption | 66⅔ | 133⅓ |
| Other | 33⅓ | 66⅔ |
| Soviet Union | 33⅓ | 133⅓ |
| Consumption | 16⅔ | 33⅓ |
| Other | 16⅔ | 100 |

not enough to show that relatively more research and relatively more capital formation will be required in the future to maintain Russia's rate of growth of income; Russia will be in a position, if the growth rate is maintained, to devote far more effort to both these items and still provide for an increase in consumption rapid by any past standards.

This analysis, the importance of which can hardly be exaggerated, raises two questions: first, will the Soviet leadership be under pressure to permit consumption to more than double during the next twenty-five years; second, will the more rapid expansion of production other than consumption be sufficient to maintain the 6 percent rate of increase in total income on which the entire analysis depends? Let us consider each of these questions in turn.

## The Probable Expansion of Consumption

The best available evidence is that Soviet real wages in urban areas have only recently approached the level that prevailed in 1928.[6] Because perhaps twice as many people are receiving urban wages as received them in 1928, average real earnings for the country as a whole have risen (as urban earnings are higher than those in agriculture); in addition, as a by-product of the war, the number at work in each family has increased, so that urban *family* income has also increased. But the point to be stressed is that there appears to be no significant urban opposition to the Communist regime despite the slow rate at which real wages have risen. It is hard to believe that the Russian people will not be satisfied with a doubling of their living level over the next twenty-five years—a rise that may well be as large as that realized in the United States and in all probability rather larger than is likely to be achieved in Great Britain.

Does the fact that Khrushchev has boasted that Russia intends to "overtake and surpass the most highly developed capitalist countries in per capita production" make a more rapid expansion of Russian consumption likely? Not necessarily. For the Khrushchev boast is always confined to selected items—particularly "meat, butter, and milk." These are areas where consumption tends to rise less rapidly than income, so that American consumption of these items in 1975 might well be equaled within Russia even if Russian consumption as a whole had no more than doubled by that date.

Finally, it is not necessary to argue that under *no* circumstances will consumption more than double. All we need stress is that when income is increasing very rapidly, so long as consumption increases significantly less rapidly, increasing relative amounts can be devoted to such crucial items as research and capital formation. Actually, much depends on an item not previously mentioned—military expenditure. If such expenditure were to decline relatively, a more than doubling of consumption and a more than sixfold expansion of nonmilitary other production would *both* be possible; in fact, in strict logic both would be possible so long as the military share of total production remains constant. Overall, it seems fair to conclude that the share of total production devoted to consumption may, without raising serious problems for the Soviet leadership, decline in the future as it has in the past, so that the portion of total productive effort that can be devoted to other production may well rise significantly.

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[6] Janet G. Chapman, *Review of Economics and Statistics*, May, 1954.

### The Role of Borrowed Technology in Russian Development

The mere fact that the Soviet Union is likely to be in a position to devote relatively larger amounts to research and capital formation by no means guarantees that the past rate of development will be maintained in the future. Let us examine some of the arguments put forward suggesting that a retardation in the rate of Soviet growth is likely. One such argument is that Russia will in the future no longer be able to borrow technology developed by the West. As wartime experience made clear, however, borrowing is not always easy. Not only are screw threads and gauges likely to be different but conditions of manufacture and use are likely to vary sufficiently to make substantial redesigning necessary. For example, the modern complicated American automobile engine designed to be manufactured to close tolerances and to burn high-octane gasoline has almost no relevance to Russian needs, which are for a low-compression engine simple in manufacture and reliable in operation.

There is no doubt that the Soviet regime has been quite willing to borrow Western technology when it seemed desirable to do so. But it is the impression of students of Russia that the borrowing has reflected not so much inability to develop their own technology when urgently needed, as an inability to develop separate technology in all areas at the same time. In priority areas, such as atomic energy, military equipment, and rocketry, Soviet technology is clearly not only their own but first-rate. True, German scientists were of some help in rocketry; but it is doubtful whether they did not, on balance, help America more than Russia. In fact, the contrast between Russia and the "West" is misleading. For the rate of American development itself reflects substantial borrowing from the rest of the "West."

In short, particularly during the period from 1928 to the war, when Russia was extremely short of technicians, borrowing from the West permitted those that were available to concentrate on priority areas and to this extent undoubtedly speeded up the growth of Russian income. But the acute shortage of technicians that marked the thirties has been substantially eliminated by the massive Soviet investment in education and research (described more fully in the chapter that follows). The problem, therefore, becomes an essentially economic one: How much more will it cost the Soviet Union to develop its own technology in the future (borrowing, say, no more than we borrow from other nations) compared with what it cost to adapt borrowed technology in the past? Undoubtedly it will cost more. In the light of both the relatively small cost of research in general and the relatively small amount of technology Russia borrowed, however, the increasing cost involved is one that Russia, in my judgment, will have no difficulty in meeting. Hence it is not clear that the rate of growth of Russian income will on this account be slowed down—though the Soviet Union will undoubtedly have to devote more resources to research as technology that was previously borrowed is developed independently.

### Possible Increases in Capital Requirements

Because capital formation is so much more costly than research and development, the possibility that capital requirements may increase in the future in relation to output is considerably more serious. Recall that the value of the capital stock of a developed country has been found to be roughly three times the value of its current output, giving a capital-output ratio of 3 to 1. When saving is no more than 5 percent of income, which is the level in many underdeveloped areas, then the capital stock to current saving ratio is 60 to 1 and saving is inevitably scarce. But net capital formation in the Soviet Union has now reached 25 percent of income, so that the ratio between capital stock and current saving is now 12 to 1 and saving has become relatively plentiful. Moreover, if the rate were to rise further to, say, 40 percent—admittedly unlikely but not impossible in the Soviet Union by 1975—the ratio would fall to a mere 7.5 to 1 and capital would become very plentiful indeed. In short, where the capital stock is large to start with or the rate of saving high, the entire importance of capital formation is far less than in an underdeveloped country starting from scratch. In fact, there is a certain "benefit of backwardness" involved. When capital formation is rapid—nine tenths of Russian industry is estimated to have been built since 1928—the average age of capital equipment is lower and the average quality of the capital stock higher than when accumulation has proceeded at a slower pace. This is a factor from which Russia has benefited in the past and will continue to benefit in the future if the pace of development is maintained.

Moreover, there is no general reason to believe that capital requirements may increase more rapidly than output in the future. In the United States, output has been increasing *faster* than capital requirements, especially since about 1910, so that the capital-output ratio has been *falling.* In fact, in 1950 output per unit of capital was a third *higher* than it had been in 1875.[7] One argument suggesting why the opposite is likely to occur in Russia is that "social overhead capital" has been neglected there. In free enterprise countries part of the problem of "social overhead capital" is statistical. We have seen that those who measure the national income have not found a way to estimate the contribution to current production of government capital; hence increased spending for schools and roads absorbs capital without bringing about any measurable increase in current output. And it may also be true that the contribution of investment undertaken primarily to improve the quality rather than the quantity of output is not adequately reflected in our national income estimates.

In the Soviet case we really have two problems: is investment going to become increasingly necessary in areas whose contribution to current production cannot be measured or can be measured only inadequately; and is investment going to become increasingly necessary in areas with a high capital-output ratio? Obviously Russia is going to have to invest increasing sums on roads and other forms of "social overhead capital." But during the periods in which the 6 percent rate of increase in income was realized, starting when Russian income was very much lower than it is today, very large investment was made in education—one of the most costly of all types of "social overhead capital." As a result a high level of literacy has been achieved. It is therefore by no means obvious that future investment in "social overhead capital" will have to increase *on a relative basis*—though perhaps some relative expansion may turn out to be necessary.

## The Problem of Soviet Agriculture

Is it likely that Soviet investment in areas with a high capital-output ratio will be increasingly necessary in the future? One area often mentioned in this connection is agriculture. There is no doubt that Russia is going to have to invest increasing sums in agriculture, partly to provide a better diet but also because expansion of the labor force for the next decade or so will depend mainly on releases from agriculture, as the number entering the labor force as a result of population increase is severely limited for the immediate future by the low levels to which birth rates fell during World War II. The backwardness of Russian agriculture is hard to believe. With somewhat less fertile land but rather more under cultivation than in the United States, perhaps 40 percent of the Russian labor force succeeds in growing little more than half as much food as is grown by the 8 percent of the American labor force that remains in agriculture. How are we to interpret this sad state of affairs? Russia is currently feeding her population—even if rather badly by our standards. To feed them better would certainly have absorbed scarce resources that have been utilized to speed industrialization and increase Russia's military power. Are we therefore to say that Russian agriculture is a clear example of the failure of planning to provide the Soviet people with a desirable diet or a tribute to the success of Soviet planning in carrying out the objectives of the Soviet leadership?

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[7] Moses Abramovitz, *Occasional Paper 52* (New York: National Bureau of Economic Research, 1956).

Given the objectives of the Soviet leadership, the second alternative seems closer to the mark. Only if the Soviet regime had tried to expand agricultural output in the past and failed—so that massive investment in the future would be needed to bring about an expansion of output—would Russian agriculture be likely to present a serious future problem. But Soviet agriculture, broadly, has provided enough food so that food shortages have not interfered with the expansion of industrial output and released about as many workers as the industrialized area could effectively cope with. Under these circumstances there has been little reason for any serious effort to be made to increase agricultural production and productivity. In fact, the very backwardness of Russian agriculture should make expansion relatively easy, now that improvement has become desirable to provide incentives for industrial workers and to expand the industrial labor supply.

Moreover, what would appear to be most urgently needed is additional agricultural research, which may well require quite limited amounts of productive factors. Recall that in our own case an increase in productivity in agriculture, which since World War II has been more rapid than in almost all areas of industry, has mainly resulted from annual public expenditures on agricultural research amounting to perhaps a thirtieth of 1 percent of the national income. Clearly research alone will not solve the Russian problem; large amounts of capital will have to be invested in Russian agriculture as well. But it is by no means certain that the capital-output ratio in agriculture will turn out to be higher than it has been in the area of heavy industry on which Russia thus far has concentrated—and even less certain that agriculture will present a problem in view of the rapidly expanding productive effort that the Soviet leadership will have at its disposal to devote to research and investment. And, to the extent that rapid increases in agricultural production and productivity are achieved, the resulting release of labor will go far to offset any labor shortage that may develop in industry.

### Housing and Capital Requirements

The one area where substantial investment involving a high capital-output ratio will clearly be required is housing, where the ratio is perhaps 10 to 1 as compared with 3 to 1 in the economy as a whole. Russia's rapid urbanization has brought about an appalling housing shortage. Space per person fell from 6 square meters in 1928 to just over 4 in 1937 and less than 4 in 1950. This means that each urban Russian has for his own use less than 50 square feet of space, which is perhaps one tenth the American level—about enough to hold two large beds! But, in a somewhat different sense than before, this is another example of the "benefit of backwardness." So low is the level from which Russia starts that a relatively small current investment in housing—perhaps one third the current American amount—can nonetheless bring significant reductions in the housing shortage. In fact, recent housing production, though small by American standards, appears to have been large enough to increase average urban space available by as much as 10 percent a year even after allowing for population growth. Hence, though housing will clearly absorb increasing amounts of investment, it is by no means certain the sums involved will put a serious strain on the economy in view of the increasing amounts that will be available.

### Conclusions

It should be stressed again that this entire discussion of the prospects for Russian development is highly speculative. Also it should in fairness be stressed that the opinion of most Russian experts is rather more pessimistic than the discussion just concluded; most believe that Russia will not in the future be able to maintain the rate of growth recently achieved. But in the past Russian experts have shown a notable bias in the direction of pessimism. To the question, "Will the rate of Russian development slow down in the future?" perhaps the fairest overall answer is once again the Scotch verdict: "Not proven."

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# Factors Explaining Russian Accomplishments

### Introduction

Perhaps the most important thing to be stressed about Russian economic development is that the factors responsible for it are substantially the same as those responsible for development anywhere else: encouragement of basic and applied research to provide new and improved technology; introduction of the better technology by rapid innovation; provision of additional capital through high saving and investment; discovery and utilization of the country's natural resources; and, in general, the fostering of a climate that favors economic development. When we consider each of these factors in the discussion that follows, we shall find obvious differences between the Soviet Union and the United States: the process of innovation is, for example, organized rather differently under capitalism than under Communism. But, overall, we shall find that the similarities far outweigh the differences.

### Research in the Soviet Union

If the Russians have any single "secret weapon" explaining their rapid economic development, it is the emphasis they have placed on research and technology. As we have seen, this was to a considerable extent forced on the Communists by Russia's loss of technicians during the civil war. Their response was a massive investment in education to replace those who had been lost. Up to World War II the Soviet Union's rapidly expanding technological needs could only be met in priority areas; it was during this period that Russia borrowed—and greatly benefited from borrowing—Western technology. But after 1945 the situation changed drastically as the Soviet regime felt itself in a position to expand significantly its scientific activities. It is the situation that has prevailed since 1945 on which we shall concentrate.

How has it been possible to develop science rapidly—particularly under a dictatorship? First, Russia has had a long tradition of scientific achievement, especially on the theoretical side. But of six outstanding Russian scientists recently listed by *Fortune,* the oldest was twenty-one at the time of the Communist revolution and four were thirteen or younger. Although some of today's scientists received a part of their training in the West, the present status of Russian science represents, to an important extent, a return on the educational investment of the twenties and thirties. Second, no area of Russian society has enjoyed greater freedom than the physical scientists—so much so that the greater relative freedom has been a factor in inducing able students to choose science and especially basic science. True, Stalin's espousal of Lysenko's mistaken ideas set back Soviet genetics a generation; but nothing comparable occurred in other areas and Communist doctrine now urges Russian scientists to make use of Western scientific discoveries even though the discoverers suffer from an "erroneous philosophical outlook."

## Communist Support of Scientific Research

Soviet support of science has been lavish—in terms of the educational system, facilities for research, and the living level of scientists. Let us consider each of these. Emphasis on science starts at the secondary school level. While more and more average and inferior students are apparently being trained on a vocational basis to take their places in industry, brighter students are admitted to "ten-year schools," where they devote 40 percent of their time to mathematics and science, with four years of chemistry, five of physics, and mathematics through trigonometry compulsory. The schools operate on a six-day week, ten months in the year. Thereafter, each student is paid by the government while he continues his studies, with those in technical schools receiving half as much and those in graduate schools as much as the average industrial worker. It is obvious that able students in the Soviet Union are not lost to science because they lack resources to finance their education.

Numerous examples could be given of the lavishness of the facilities for scientific research that have been provided; one will suffice. Russia has until quite recently had the world's largest atom smasher. She achieved this distinction by not waiting for design improvements; instead, she built her smasher with 36,000 tons of iron in its magnets when very much less would now suffice. The result, however, is that the Russians have for several years had in actual operation a machine characterized by a group of American scientists as capable of discoveries that "could at any time create a furor similar to that caused by the launching of the satellites."[1]

Even more impressive than physical facilities, which are hard to sum up on any overall basis, is the unique Institute of Scientific Information. Founded only in 1953, the Institute systematically abstracts—and circulates throughout the Soviet Union—the articles contained in 8,000 professional journals, including 1,400 from the United States, 800 from Great Britain—and no less than 3 from Madagascar! In sharp contrast, of the 1,200 Russian scientific journals currently received by the Library of Congress, only 30 are regularly translated into English. This explains why a group of American laboratories recently spent five years and $200,000 to solve a research problem—only to find that the results had long since been published in Russia! One can understand the British biologist who declared: "In general biology [the Institute is] publishing 100,000 abstracts a year. No other agency in the world is doing this job. I wish to God I could read Russian."[2]

In addition to the unusual degree of political freedom, an important factor in recruiting scientists is the paucity of alternative opportunities. Little Soviet talent is wasted on distribution—advertising, salesmanship, marketing—and less in settling legal matters. Even practicing physicians, most of whom are women, are not highly regarded and rank only slightly above factory foremen. Yet salaries paid Soviet scientists are large even by American standards and by Soviet standards are immense. An outstanding scientist may earn from twenty to fifty times as much as a factory worker. "Soviet scientists, almost alone among Russians, may equip their homes with refrigerators, TV sets and record players. They may maintain weekend cottages in the country and spend their vacations on the Black Sea Riviera. They are, except the topmost political and industrial brass, the most favored class in the Soviet Union. 'Class distinctions are greater than anything I had ever imagined,' reported a British chemist [in 1956]. 'Scientists and professors always seem to have a host of servants, maids and chauffeurs.' "[3] In short, a regime that started with the theoretical objective of "From each according to his abilities, to each according to his needs" is today, in all probability, readier than any other economy to provide material rewards to those who help in fulfilling its objectives.

[1] *Life,* December 16, 1957, p. 110.
[2] *Fortune,* February, 1957, p. 119.
[3] *Life,* December 16, 1957, p. 118.

## The State of Soviet Science

What sort of science has been achieved by all this effort? Dr. Lee DuBridge, president of the California Institute of Technology, has made the following overall appraisal: "The Russians were in the position after World War II that we were in in the 1920's. They woke up, and they've been going like mad. Whenever that happens, you'll find that progress is greater in some directions than in others. . . . It's not like a race between two horses but more like a race between two fleets of 100 yachts. Some of their yachts are ahead and some are 'way back. But their whole fleet is moving faster, and all their yachts could pull ahead."[4]

Perhaps in some ways even more remarkable than the overall achievement is the emphasis on basic research. A recent report of the National Science Foundation, while noting that by American standards Russia is still technologically underdeveloped, stresses that the balance between basic research and applied research is more favorable in the Soviet Union.[5] "In the purely theoretical fields, Soviet scientists are as good as any in the world, and in fact a pronounced emphasis on theory dominates all of Soviet science."[6] For a country starting from behind and very much interested in immediate practical results, this is a remarkably farsighted distribution of effort.

In short, the Soviet leadership—to a degree that appears greater than in any other country—seems convinced that nothing is more important for economic development in the long run than a high and effective level of scientific research. Having come to this conclusion, the Soviet regime has created an institutional framework that is "exceedingly well contrived to assure, first, that the largest fraction of the most able people goes into science and engineering as professional fields and, second, that the energies of those able people are directed toward the attainment of those production goals Mr. Khrushchev and his colleagues consider most vital."[7] And, one may add, that conditions have been created such that scientific research is "being pursued with an urgency . . . reminiscent of a wartime operation" and has as its objective nothing less than "to overtake American science in its great diversity, its high quality, and its magnificent sweep."[8]

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[4] *Life*, December 16, 1957, p. 109.

[5] *Basic Research: A National Resource* (Washington: Government Printing Office, 1957), p. 45.

[6] *Fortune*, February, 1957, p. 117.

[7] Harry Schwartz, *New York Times Book Review*, December 22, 1957, p. 1.

[8] Robert E. Marshall, *Bulletin of the Atomic Scientists*, February, 1958, p. 83.

It is the basic emphasis of our entire analysis that nothing is more important in explaining economic development than effective programs of basic and applied research. It follows that no aspect of the Soviet Union represents more of a challenge to free enterprise in general and the United States in particular than the program of scientific development the Soviet regime has been able to create.

## Innovation under Communism

In any dynamic economy such as the Soviet Union the distinction made by the economist between the entrepreneur and the innovator loses much of its meaning. With nine tenths of Russian industry developed since 1928 and technological improvements heavily emphasized it is obvious that Russian management has actually been devoting a major part of its energies to innovation. We can tell, therefore, much about innovation by examining how business is managed in the Soviet Union.

First, under the Soviet regime the powers of management have been steadily strengthened and those of labor unions steadily weakened. It is not too great an exaggeration to say that the basic function of a Russian union today is to get more work out of its members. Although some of the powers of management—such as the right to refuse permission for a worker to transfer to another job—were of wartime origin, similar to Britain's "labor direction," and have recently been reduced in scope, the prerogatives of Russian management remain in many regards sufficient to arouse the envy of even an American capitalist of the old school. Second, as in the case of the living level of scientists, the Soviet Union, since the First Five Year Plan, has shown increasing willingness to provide large material rewards for superior industrial performance. This has been true at all levels: the famous Stakhanov, who became the symbol of efforts to increase productivity, was a coal miner richly rewarded for innovations in mining technique. But it has been most systematically true for managers, who receive large bonuses every time they overfill the quotas set by the Plan.

Why is a manager important in a planned economy? Does he have to do anything except execute routine objectives given him by the Plan? It is true that a manager under free enterprise, who may start out limited only by a quantity of money, may have a wider range of choice than his Soviet counterpart, who will have his raw materials, his labor supply, and even the additions to his capital equipment fixed by the Plan. But the lack of worker organizations may well mean that a Soviet manager has even greater latitude in the way in which he utilizes the labor and materials given him so as to maximize output; and it is larger output in relation to input that is involved in increases in productivity.

Moreover, to the extent that the Plan is faulty, it is the manager who must improvise. Actually, he has considerable room for maneuver, being able to barter surplus supplies for those that are short and to use the "manager's fund"—technically allocated to improvements in the living conditions of the plant's workers but often capable of being diverted to other purposes—to facilitate such exchanges. In fact, successful managers consistently maintain reserves—both of money and materials—for emergencies, and there have developed a group of "expediters" who live well by arranging "deals." Most of this sort of thing is illegal and often wasteful, but is tolerated so long as managers are enabled thereby to achieve increased production.

How effective is Soviet planning? There is considerable evidence that Russian plants do for themselves many things—like producing screws with slow-speed machinery—that could be better done by others—in this case, specialized screw manufacturers using high-speed equipment. But this desire to be independent of others, in part at least, grows out of the Soviet effort to operate its plant capacity at a pace rarely achieved under free enterprise except in wartime. In fact, the sort of barter deals just discussed are not too different from those that take place in a free enterprise economy under the impact of wartime shortages. One also gets the impression that the number of those inspecting and checking up on the operation of the Plan is unnecessarily large. Certainly both establishing production objectives under planning and checking on their achievement are complicated; as suggested in Chapter 26, there is no doubt that judging results by profits is a remarkably effective way of gauging productive efficiency.

But the point with which we are concerned is not the relative productive efficiency of the two alternatives in economizing resources in a static sense; rather, we are concerned with the extent to which they are likely to lead to a dynamic expansion of productivity over time. What the Soviet authorities have done is to recognize the importance of management, strengthen its powers, and reward it liberally when it achieves results—without too much concern over the means used. Moreover, the main result that has been sought has been the most rapid possible expansion of output. The essence of the conventional case for free enterprise is that existing quantities of the productive factors, utilizing existing techniques of production, will be most effectively used under a profit system. But in Russia not only is the capital supply rapidly changing—a point to which we shall return in the following section—but technology is also in a state of flux.

In such circumstances the pressure on a Soviet manager to innovate —to try new ways of doing things—may possibly be greater than on a free enterprise entrepreneur. Under free enterprise, unless a firm is large enough to risk experimentation, "proof" that a new technique is unlikely to "pay off" is an adequate defense for not innovating. If the "proof" is valid, it should of course also rule out the use of the new technique under Communism, for "unprofitability" merely means that there is some other way of achieving the same result with a smaller use of scarce factors. But, viewed dynamically, the whole process of developing new techniques is not a matter which lends itself to precise calculations. A certain "irrationality" that prefers output to profits may well "pay off" over a somewhat longer period of time by making techniques profitable that appear at the start to be unjustified. But the relative speed of innovation under free enterprise and Communism is speculative and likely to depend on particular circumstances. What does appear certain is that Russia has succeeded in creating a system that stresses and encourages rapid innovation.

### Capital Formation in the Soviet Union

In the preceding chapter we pointed out that net capital formation has not only been increasing but, at 25 percent of income, is at one of the highest levels ever recorded for any economy in peacetime. Whether this represents "exploitation" of the present generation for the benefit of future generations need not concern us. What needs to be stressed is that Russia's rapid capital formation is clearly an important factor helping to explain the rapidity of Russian development.

The high rate of net capital formation in the Soviet Union has had a number of effects. Compared with the situation in most underdeveloped countries, capital has, of course, become relatively plentiful. The comparison with a developed country such as the United States is more complicated because of the extent to which increases in productivity can be achieved in our case without net capital formation by the embodiment of advanced technology in capital replaced through reinvestment of depreciation allowances. But to keep the average age of capital as low as the age achieved by net capital formation at the Russian rate would require extremely rapid rates of depreciation; it is likely, therefore, that Russian capital equipment is, on the average, younger than in any other country.

Let us stress once again the extent to which net capital formation at the Russian rate changes the whole character of capital use. When the ratio of capital stock to current saving is 60 to 1, then the emphasis on economizing capital that has appeared in most discussions of investment criteria for underdeveloped countries undoubtedly makes sense. But in the Russian situation, when the ratio is only 12 to 1 and may quite conceivably fall further, then capital availability is going to change radically, unprecedentedly, and to an unknown extent during the lifetime of capital goods that are currently being produced. Under such circumstances the whole process of deciding how capital can best be used becomes at once more complicated and less important than in the case where continued extreme capital scarcity is likely to continue.

### Natural Resources and Russian Development

Starting in the early twenties, the Soviet Union embarked on a systematic and thorough exploration of its available natural resources as a result of a government policy to map out reserves of any material that could conceivably have some use. One by-product of this effort was the discovery of uranium in Siberia in 1931—long before any thought of its usefulness as a nuclear fuel had arisen. A second by-product has been the development of excellent prospecting methods and a large corps of men competent in the earth sciences. In fact, Russian knowledge of the polar regions is unexcelled.

In general, the Soviet Union is well supplied with natural resources, though the availability of minerals and fertility of agricultural land is on the average less than in the United States. Only a few items are scarce, and these can in most cases be obtained from satellite countries. Thus even in the absence of trade between the Soviet and Western blocs, Soviet economic development would not be held back to any important extent by shortages of natural resources.

### The General Climate and Russian Development

Early in the thirties the famous British cartoonist Low captioned a drawing of what he considered a typical factory scene: "Peasant girl, just off the farm, absent-mindedly trying to milk a steam hammer." Hugh Cooper, the American engineer responsible for the Dneprostroi Dam, when asked to comment on an even larger hydroelectric development, simply returned the plans with the note: "The elevator in my apartment house does not work." The whole idea of a nation recently defeated in war, 80 percent peasant, without any tradition of mechanical ingenuity, attempting rapid industrialization appeared humorous in the extreme. Little more than a decade later, Low's peasant girl could have been turning out some of the best tanks the world has ever seen and twenty-five years later she could have worked on the rocket that put Sputnik in orbit. Perhaps her "take-home pay" from development has thus far been small, but she is convinced, as few are in any other nation, that rapid development is possible.

Further, to an extent probably approached only in the United States, she is convinced that development is not a matter of rubles and kopeks —or of profits—but an end in itself. Partly this is a matter of defense. The local "Palace of Culture and Rest" during the thirties had an illuminated map with arrows that lit up at Archangel and Vladivostok in response to the question as to where the Allies had invaded Russia; and today the memory of Hitler remains fresh. But partly it grows out of a spirit of competition. For although capitalist competition is considered rotten and bourgeois, "socialist" competition against the production norm—or against another factory—is taken to be wholly desirable.

Now a new competition is offered: "To overtake and surpass the most highly developed capitalist countries in per capita output." The appeal is wide. To the scientist, there is the challenge of "overtaking American science in its great diversity, its high quality, and its magnificent sweep." To the man in the street, there is the prospect of equaling —even surpassing—the American consumption of "meat, butter, and milk." Undoubtedly this will not be as easy as Khrushchev makes it sound. But the climate that has been created in the Soviet Union will certainly help to promote the development effort that Russia makes.

# PART IV Underdeveloped Areas

## 39 The Role of Population

### The Malthusian Analysis

Toward the end of the eighteenth century Thomas R. Malthus, an Anglican cleric, got into an argument with his father regarding the usefulness of reform. From the argument, in order to show that reform was futile, came Malthus' famous *Essay on the Principles of Population,* which contended that population tended to increase approximately at a geometric ratio whereas food production increased at no more than a roughly arithmetic ratio. As a result population could be expected to increase faster than production until living standards fell to the subsistence level, at which point the "positive checks" of war, famine, and disease could be counted upon to bring to an end the excessive increase in population. Hence living levels could exceed the subsistence level for no more than brief periods, and any attempt to improve man's lot was clearly a waste of time. Since Malthus wrote, the population of the United States has increased from perhaps 4 million to 180 million and our level of living has risen immensely; to a lesser degree the same thing has happened in the whole of Europe. Thus it would certainly seem as if history has proved Malthus spectacularly wrong for Western Europe and the United States.

How could he have been so wrong? From the start he recognized the possibility of "preventive checks," which include infanticide, abortion, birth control, postponed marriage, and continence within marriage. As a good Anglican cleric he understandably did not place much stress on abortion and infanticide—and birth control as we now know it did not then exist. Thus Malthus' conclusion that the positive checks would inevitably operate stemmed from his skepticism regarding the possibilities of postponed marriage and continence within marriage—which he called "moral restraint." Taken by itself, his pessimism regarding "moral restraint" seems justified by experience. There is little evidence that continence has been a significant factor in holding down birth rates, and systematic postponement of marriage seems to have been of broad historical significance only in Ireland. The Irish tradition of postponement grew out of the Potato Famine that started in 1845, which was so drastic that the population was cut almost in half in a decade. It is doubtful, therefore, if the Irish solution can be applied generally. Hence Malthus' pessimism made considerable sense for the world he knew. If the preventive checks were likely to be either ineffective or unacceptable, it appeared inevitable that population would continue to increase until living levels had been forced down to the subsistence level, when a further expansion would be prevented by the operation of the positive checks of war, famine, and disease.

What has changed since he wrote? First, birth rates have declined drastically. The *extent* of the decline can be properly attributed, I believe, to the increasing availability of modern birth control. This statement should not be misunderstood. Mere availability of birth control will not reduce birth rates if people do not want small families, while the desire for small families may reduce birth rates, by increasing abortion and moral restraint, even if birth control is not available. But it seems quite unlikely that the decline would have been as drastic as it has been in the absence of modern birth control. And the decline has been drastic. Had the rate of increase of population realized in the United States from 1800 to the Civil War been maintained to the present time, our population would be three times larger than it now is—or more than 500 millions. So effective has population limitation become that there has been doubt whether some nations would maintain their numbers. For Great Britain, the latest estimate, which takes into account the increase in birth rates since World War II, is that population will increase little more than 2 million before at least becoming stationary and perhaps starting to decline. Malthus' first error, therefore, was his failure to foresee modern birth control.

In addition, Malthus buttressed his pessimism by arguing that production could increase approximately at an arithmetic ratio while population would increase roughly geometrically. For this he has been roundly criticized on the ground that production can increase, and has increased, faster. This is certainly correct if the arithmetic ratio is taken literally. Such merit as the ratio has is in emphasizing the diminishing returns that result when increasing quantities of labor are applied to a given quantity of capital and natural resources with an unchanged technology. In company with the other economists of his day, Malthus underestimated the extent to which technology could be improved and capital increased. And he also made the mistake of worrying about diminishing returns at a time when the opening of the almost empty areas of the Americas, South Africa, Australia, and Siberia made available, to those people whose living levels have been rising since he wrote, an increase in natural resources on a scale that can never again be duplicated. The result of all three—improved technology, additional capital, and expanded natural resources—has been a vast increase in production that has made possible a drastic and unprecedented decline in death rates. Had it not been for the accompanying—but usually delayed—decline in birth rates, the increase in population would have been even larger than it was.

In short, Malthus made three errors: he failed to foresee the development of modern birth control, the improvement of technology and the increase in capital that have taken place, and the vast and unique expansion of the natural resources available to the Western world that has also occurred since he wrote. As a result, his predictions have been spectacularly wrong. But let us not lose perspective: rising living levels are the exception rather than the rule. Over most of the world even today—and even more certainly over the whole period since Malthus' time—population is, and has been, so large that periodic famines and dietary-deficiency diseases remain of significant importance in the death rate. As a result, much of the human race remains at, or close to, the subsistence level.

### The Possible Increase in Population

So much for the past; as a prophet Malthus could hardly have been worse in respect to the Western world. But what of the future? The first thing we need to understand is that appreciable population growth is *physically* impossible for any considerable period of time. All living species have the ability to multiply at a rate more rapid than the environment can eventually support. In the case of the more elementary forms of life, the potential increase is immense. The amoeba, for example, is capable of dividing—which means doubling—every hour. As a result, if the environment were to continue favorable, a single amoeba could produce *in less than a week* progeny that weighed more than the world. In a couple of decades, if they all survived, the progeny would fill the known universe and be propagating at the rate of one known universe an hour!

Compared to the amoeba, human beings reproduce quite sluggishly. It is, however, well within our capacity to double every 25 years. Apart from immigration, this is the rate at which our own population increased from 1800 to 1860. Even at half this rate, which is less than the rate of increase that has prevailed in the United States since the end of World War II, the geometric progression of population growth rises remarkably rapidly, as Table 39-1 shows. In short, if the rate of growth we achieved during the first 60 years of the nineteenth century were to prevail for the world as a whole, in 400 years the human race would number 164 trillion. Even if only our present rate of increase were to continue, the same number would be reached in 800 years.

**TABLE 39-1**

**Possible World Population** [a]

(In billions)

| Year | 50-Year Doubling | Year | 25-Year Doubling |
|---|---:|---|---:|
| 2350 | 640 | 2150 | 640 |
| 2550 | 10,240 | 2250 | 10,240 |
| 2750 | 163,840 | 2350 | 163,840 |

[a] The 1950 world population has been taken as 2.5 billion.

What would this involve in terms of human density? Including deserts and Antarctica, the total land area of the world is estimated at between 36 billion and 37 billion acres, which works out at around 1 quadrillion, 600 trillion square feet. At present there is for each living person an average of about 15 acres—or perhaps 650,000 square feet. Even at the slower rate of increase the land available per person would be reduced to 2,500 square feet by the year 2350, to 160 square feet by 2550, and to less than 10 square feet by 2750. At the faster rate of increase, reduction to 2,500 square feet would take place by 2150, to 160 square feet by 2250, and to less than 10 square feet by 2350.

These projections do not begin to do justice to the impressiveness of a geometric progression. The Earth is estimated to weigh 6 sextillion, 600 quintillion short tons. In 1,200 years at the faster rate, and in 2,400 years at the slower rate, our progeny will weigh 6 sextillion, 600 quintillion short tons. Thus, if population growth is to continue, all the matter of the world will have to be transformed into human beings by 3150 at the faster rate, and by 4350 at the slower rate! Disregarding the sun, whose temperature of 10,000 degrees Fahrenheit would appear to make its transformation into human beings difficult, the remaining matter of the solar system would thereafter be exhausted in between 225 and 450 years. It is, of course, possible—but not certain—that other stars have planets, but unfortunately the nearest takes 4.3 years to reach even traveling at the speed of light. On the assumption that speeds of 400 to 500 times the fastest present rocket may prove feasible, so as to permit an average speed of 7 million miles an hour, it has been estimated that the trip to the nearest star might be made in 350 years, with the first 50 devoted to acceleration and the last 50 to deceleration. Assuming that those making the trip wished to continue to expand their numbers, it would be essential for the rocket to start with considerable excess capacity, as during the trip the passenger list would increase 128 times at the slower rate of population growth and 16,000 times at the faster rate! And the trip back might present difficulties if, on arrival, it turned out that the star had no planets.

In short, it seems quite likely that we shall have to content ourselves with the matter of the solar system—and not unlikely that we shall have to make do predominantly with the matter of the Earth, as Jupiter, with two thirds of the mass of the solar planets, has a surface temperature of 200 degrees below zero and a solid center surrounded, first, by 10,000 miles of ice and, second, by 25,000 miles of atmosphere cooled to the consistency of slush. Under the circumstances it seems only fair to concede to Mr. Malthus that an appreciable rate of population growth cannot be maintained indefinitely—or even for periods that are, after all, relatively short when measured against the span of human history. The only thing that appears capable of changing the situation would be the development of the ability not merely to use the energy we receive from the sun but to transform it into matter on a massive scale.

### The Immediacy of the Problem

The virtue of carrying our geometric progression to its logical conclusion is that it demonstrates that nothing science can do, even in an atomic age, to increase the productivity of our *present* resources will eliminate the necessity for a cessation of population growth. But the vice of carrying the progression to its logical conclusion is that it gives the impression that the whole matter will become important only in some dim, distant future. Most of us do not easily think in terms of quadrillions—or even a thousand years. But the practical problem is much more immediate. To illustrate, we have just seen that land area per person over the world as a whole works out at about 650,000 square feet. The average for the United States is over 500,000 square feet, for India 100,000 square feet, and for Japan 50,000 square feet. Only about 15 percent of Japan can be cultivated, so that food produced domestically, which meets only about 75 percent of Japanese dietary needs, is raised on 7,500 square feet of land per person—a plot less than 90 feet square—by what is probably the most intensive agriculture prevailing anywhere. Let us assume, rather optimistically, that science by various means will be able to make the whole world 100 percent more productive than the present arable area of Japan, so that every 5,000 square feet of land—every plot 70 feet square—the world over (Greenland, Antarctica, and the Sahara Desert included) will, on the average, be able to support a person. Maintenance of a 1.5 percent annual rate of population increase—which is less than that presently prevailing for the world as a whole as well as for the United States—would reduce the square feet available per person to 5,000 well before 2250, or in less than 300 years. World population would then number over 300 billion, and worldwide population density would be seven times the present density of England and one quarter the present density of New York City!

There is of course nothing definitive in the figure of 5,000 square feet per person. If we wish to live in cells like hens in a hen bank and be fed protein gruel piped in from culture tanks on the roof, it is quite possible that far more than 300 billion human beings will be able to survive, so that the present rate of increase can continue for considerably more than 300 years. But if there are to be steaks in the future of the human race, the time during which population can continue to increase at its present rate appears relatively short. And if we raise our sights still higher and think in terms of providing the whole world a few centuries hence with something approaching the present American standard of living, it may well be that the world already has altogether too many people.

## The Inevitability of Preventive Checks

In other words, the length of time during which population can continue to increase depends predominantly on the sort of world we want when growth ceases—a conclusion we will explore more fully in the following discussion. But even if we are content to end up at a subsistence level, appreciable population growth must cease within a few centuries. This is not a matter of choice but a physical necessity. Further, if we want growth to stop with a level of living above the subsistence level, preventive checks will have to bring about an even more rapid cessation of growth. Though this last statement appears controversial, it is actually almost a tautology—true by definition. For famine and widespread disease are clearly inconsistent with a level of living above the subsistence level. True, there is the theoretical possibility that high birth rates could be just offset by an appropriate level of warfare so as to maintain living levels above subsistence without resort to preventive checks; the possibility, however, does not seem of much practical importance in a world where warfare has become atomic. But if all positive checks—famine, disease, and war—are ruled out, then the cessation of population growth can be brought about only by the operation of the preventive checks.

Among the preventive checks there appears little to be said for infanticide, and neither a general increase in continence within marriage nor a general rise in the age of marriage seems likely to make a major contribution. The influence of rising educational standards and increasing urbanization on the average age of marriage has been more than offset, at least thus far in the United States, by the greater speed with which high earnings are attained in an era when it is no longer necessary to learn elaborate craft skills. Thus, although later marriage may be of some help in particular cases, especially where the age of marriage is now quite low, the basic choice among preventive checks would appear to be between abortion and birth control. Particularly in countries with well-developed medical facilities, abortion may, for a time at least, play an important role. In Japan, where population pressure is perhaps more intense than in any other country, probably over 50 percent of pregnancies are currently being terminated by abortion. In fact, if all pregnancies currently terminated by abortion instead resulted in births, the Japanese birth rate would show only a small decline from its postwar peak; hence it seems clear that birth control has been of little importance in the sharp decline of birth rates that has in fact taken place. Though the latter is more difficult to introduce and requires more foresight, it seems likely that, in the long run, main reliance will come to be placed on birth control. Even Russia, which has traditionally relied on abortion, has in recent years shown increasing interest in making birth control generally available.

## Religions and Birth Control

Some faiths, notably Roman Catholicism, object to the use of mechanical birth control devices and prefer a modified form of continence in which intercourse is confined to the "safe" period during which pregnancy is impossible. But all religions appear to accept the need for relating the number of children to social and economic circumstances, and their acceptance of this need will undoubtedly become more complete as population increases. Religions seem, therefore, to be mainly concerned with the methods to be employed in limiting population growth and, in general, do not oppose population limitation as such, provided that the method utilized is acceptable. It may well be that new contraceptive methods will be developed in the relatively near future that will both be highly effective and be sanctioned by all religious faiths.

### Development and Population Growth

Finally, it is important to stress that, although preventive checks are inevitable if living levels are to remain above the subsistence level, there is *no automatic process by which growth is halted.* What has been called the "theory of demographic transition" seemed to imply otherwise. The suggestion was that, starting from an equilibrium marked by high birth and death rates, the effect of development was first to reduce death rates and then, after a lag during which population grew rapidly, birth rates also, as birth control became available and urbanization made small families desirable. However well this description may have fitted the Western world up to World War II, when birth rates had fallen to low levels under the world-wide impact of the Great Depression, it no longer applies to areas like the United States, Canada, Australia, or New Zealand. For these countries have *higher* rates of population increase than the world as a whole—and higher rates than applied to the "area of Western settlement" during most of the period of Western development. Yet these four countries are *among the top five in per capita incomes in the entire world.* It seems quite clear, therefore, that development, even to the highest living levels the world has ever seen, gives no guarantee whatsoever that it will bring with it any cessation of population growth.

### Population Size and Resource Use

What we have done thus far is to demonstrate by taking a long-term point of view—perhaps a disconcertingly long-term point of view—that cessation of population growth is inevitable. Our primary reason is that we must ultimately run out of resources—or, even more basically, matter. This conclusion, therefore, is in sharp contrast to the conclusion of Chapter 34: that thus far natural resources have not been either very costly in individual countries or very important in explaining differences in Western living levels. But the emphasis of Chapter 34 was on the present situation, which reflects the fact that very little of the world thus far has been industrialized. If we look to the future—and particularly if we contemplate world-wide economic development—the picture that emerges is quite different. The matter is worth examining in some detail.

Resources are of two types: those that are continually renewed by nature, such as water power, and those which get used up as they are utilized, such as coal and oil. Let us concentrate on resources that get used up. Suppose, to illustrate the matter, we analyze the implications of raising the level of living of the world to two thirds of the American level by the year 2100; let us assume that this would involve world-wide resource consumption at two thirds the present rate in this country. As total world population is today perhaps fifteen times ours, it follows that world-wide resource consumption under the circumstances would be ten times the present American rate if no increase in population took place in the meantime. On the other hand, if world population over the period continues to increase at the present 1.5 percent rate, then, by 2100, world resource use would be eighty times our present rate. What this would mean in relation to presently known supplies of some of our leading wasting resources is summarized in Table 39-2.

TABLE 39-2

Resource Use with Various Populations

| | USE | | | RESERVES | | YEARS AVAILABLE | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tenfold Increase | | Eightyfold Increase | |
| Material | Present U. S. Use | Tenfold Increase | Eighty-fold Increase | Minimum Estimate | Maximum Estimate | Min. | Max. | Min. | Max. |
| Coal (billion tons) | 0.5 | 5 | 40 | 730 | 7,300 | 146 | 1,460 | 18¼ | 182½ |
| Petroleum products[a] (billion barrels) | 3.0 | 30 | 240 | 260 | 2,400 | 8⅔ | 80 | 1 1/12 | 10 |
| Steel (billion tons) | 0.1 | 1 | 8 | 100 | — | 100 | — | 12½ | — |
| Copper (million tons) | 1.0 | 10 | 80 | 100 | — | 10 | — | 1¼ | — |

[a] Includes petroleum equivalent of natural gas.

SOURCE: Estimates from Harrison Brown, *The Challenge of Man's Future* (New York: The Viking Press, 1954), Chaps. V and VI.

In view of our experience with past predictions of exhaustion of our petroleum reserves, comparisons of this sort are suspect, but clearly the supplies of these materials are in fact limited. Although subject to a wide margin of error, the maximum figures presented may well be on the high side. The estimate for coal assumes that all coal found in seams more than a foot thick down to 4,000 feet and in seams more than two feet thick between 4,000 and 6,000 feet will be utilized, and in the case of oil the estimate assumes that fourteen times as much petroleum will be produced in the future as has so far been recovered, that natural gas will provide an additional amount equivalent to 40 percent of the liquid petroleum total, and that petroleum extracted from shale will provide as much again as liquid petroleum.

If these estimates are broadly correct, they indicate that raising living levels for the world as a whole to something approximating those now prevailing in the Western world will throw a severe strain on available resources. Even without population increase and without making any allowance for use during the period required to raise living levels, our estimates indicate that a rise to the level suggested would leave coal alone with a supply likely to last more than one hundred years. But if meanwhile population increased eightfold, as it will if the present rate of increase continues, then nothing except coal would be likely to last much more than a decade.

The most obvious implication of these comparisons is least important, for they do not mean that the world is ever likely to run out of energy or metal. There was a time in the nineteenth century when people worried as to whether the reduction in the numbers of sperm whales meant that no one in the twentieth century would be able to read at night! It is already quite clear that it will be possible for us to replace the fossil fuels with either atomic or solar energy, while steel and copper can also be replaced, probably by aluminum and magnesium. The problem of meeting *specific shortages* of natural resources can certainly be solved.

What, then, are the significant implications? Let us first repeat the conclusions of Chapter 34: thus far shortages of natural resources have not raised, and in the immediate future are not likely to raise, problems of any importance; but this is because only a small part of the world uses resources at rates even distantly approaching American usage. At the other extreme we may repeat the conclusion of the earlier part of this chapter: ultimately it is resources—or, if you will, matter—that limit both population growth and living levels. What we have just been dealing with is the intermediate situation. In it, even if (as has just been suggested) specific shortages of fuels such as coal and metals such as steel *can* be handled, the shift to other energy sources or other metals will not be *easy*. Much of our present stock of capital goods has been developed to exploit fossil fuels, and steel remains our outstandingly important metal. The loss of inherited capital involved in the shift to alternative metals and energy sources in any event will retard significantly the increase in income that would otherwise have been possible—and *the retardation will be greater, the greater the interim increase in population.*

Though rather less important, a second conclusion is perhaps worth mentioning. Atomic energy, the most immediately available substitute for fossil fuels, did not—and almost certainly could not have—become available as the result of the operation of free enterprise. For the sums expended on atomic research were well beyond the capacity of any private company. It may well be that the major changes in energy sources and materials that world-wide economic development entails will require a substantial increase in government "interference" with free enterprise to promote the development of substitute techniques and materials. Certainly the magnitude of the job involved in world-wide economic development, which these comparisons have suggested, is little understood—which is perhaps inevitable, for we have as yet no more than scratched the surface.

## 40

# Population and Living Levels

### Introduction

This chapter is concerned with the relationship between population and living levels. The first question to be considered is whether there is an "optimum" population size that will maximize real income per person. Once it is recognized that population must in any event be limited by preventive checks to maintain living levels above subsistence, the possibility of limiting numbers so as to achieve the largest possible real income per person obviously arises. We shall find, however, that no very precise definition of "optimum" can be provided.

The problem of optimum population is relatively remote. The second half of the chapter deals with the more immediate problem of the relationship between the growth of population and the growth of real income. First, we shall want to examine the effect of population growth on the growth of real income—both total and per person—but we shall also want to examine the effect of growth of real income on the growth of population, as it is obvious that causation works in both directions. Recall that "real income" measures total production; to simplify, we shall use "income" in this sense in the discussion that follows.

### Diminishing Returns and Optimum Population

To what extent does the principle of diminishing returns aid us in determining optimum population? Suppose we take labor—which we can consider as equivalent to population (disregarding changes in the percentage of the population in the labor force)—as the variable factor.

The principle suggests that there is a point at which output per unit of the variable factor is at a maximum and a second point at which total output is at a maximum—beyond which any additional labor does more harm than good. Is not the first of these the point at which income per person would be at the highest possible level and the second the point beyond which additional population would make no contribution whatsoever to production? The answer is yes—but, as we saw in connection with the discussion of Malthus in the preceding chapter, only for *a given quantity of resources and capital and a given technology.* Even if there is something to be said for treating resources—or ultimately matter—as fixed, obviously the same does not apply to capital and technology.

There is, moreover, a further difficulty. Because the principle was first formulated in connection with land, it was easy to suggest that output would never take place under *increasing returns*—where *a given increase in labor leads to a more than proportional increase in output.* Under such circumstances labor is being applied to "too much" land and output would be higher if the available labor was used with less and less land until the optimum combination was reached. Unfortunately this reasoning does not apply to the economy as a whole; outside agriculture output frequently has to be undertaken *before* the optimum combination can be achieved. Farmers can leave idle any excess quantity of land; but a railroad cannot leave idle those sections between two points that have little traffic and still operate a railroad between the points involved! This means that railroads—and much of industry—may well be producing under conditions of increasing returns. The same thing would happen in agriculture if excess land could not be left idle; if one man was compelled to spread his labor evenly over, say, 10,000 acres, he would be able to achieve very little indeed, so that up to the point of optimum output additional labor applied to the 10,000 acres would lead to a more than proportional increase in output. Thus, for any economy taken as a whole, we are likely to find at any time some areas where diminishing returns have already set in, some that are producing at the optimum level, and some that are operating in the range of increasing returns.

Can any overall balance be struck for the entire economy that would offset the areas of increasing returns against those with diminishing returns and so give some indication of where the overall optimum might lie? The only answer is that we certainly do not as yet have sufficient information to strike such a balance with any precision. Moreover, if we are interested in the population that is *ultimately* optimum, it is a balance that would have to be struck, not in terms of existing capital supply and technology, but in terms of the capital supply and technology that might exist at some ultimate future time. Finally, optimum population is obviously not a matter that is going to be settled entirely in economic terms.

Because the problem is difficult and not entirely economic, there has been a tendency in economics to state the difficulties and let the matter drop. This is unfortunate. Ultimately—as the previous chapter demonstrated—it is obvious that there is a point beyond which additional numbers must reduce living levels despite increases in capital or improvements in technology. The decision as to whether the future holds protein gruel piped in from a culture tank on the roof, an occasional steak, or an approximation of the largest possible income per person is a decision that the human race is going to make—either consciously or by default. It would seem undesirable to have it made by default simply because precise information on optimum population is lacking. We shall feel free, therefore, to venture some guesses on the subject in the discussion that follows.

### Population Growth and Living Levels

Let us turn from the ultimate relationship of population and living levels to the immediate problem of the effect of population growth on the growth of income. At first sight it might seem that, short of the point of maximum total output as given by the principle of diminishing returns, any increase in population, by adding to the labor supply, would add *something* to production and income. But this is not true even in the short run if the possibility of increases in capital and improvements in technology are not ruled out (as they are in connection with the principle of diminishing returns). The reason is that additional population, besides offering additional labor, requires additional maintenance, which may be at the expense of capital formation and technological improvements. In an economy such as India, which is at a low level of living but is interested in the general welfare of its people, slower population growth may well *speed up* the increase in even *total* income (and not merely income per person)—though it is possible that in a developed economy subject to business cycles, slower population growth may possibly intensify such cycles and so *retard* the rise in income.

A careful study of prospects for India, which we shall shortly examine in some detail, suggests that in the Indian case a rapid rate of population growth is in fact likely to slow down the growth of total income. But let us start with the more general—and, at least for India, more favorable—assumption that the increase in total income will not be affected by population growth. To the extent that this assumption is correct it follows directly that the rise in living levels depends on the extent to which total income increases faster than population. Suppose we assume that the average annual income per person in an underdeveloped country is $50—as it was in 1952–1954 in Burma.[1] Table 40-1 indicates the income per person that will prevail in the year 2000 in such a country if the increase in total income exceeds the increase in population by varying amounts. This table means that, if the growth of income exceeds the growth of population by 1 percent, income in 2000 will be $82 per person, while if income growth exceeds population growth by 2 percent, income in 2000 will be $135. The effect of various possible combinations on income in 2000 are set forth in Table 40-2.

TABLE 40-1

**Income in 2000 Given Various Excesses of Income Increases over Population Increases Starting with a 1950 Income of $50 per Person**

| Percentage excess | 0 | ½ | 1 | 1½ | 2 | 2½ | 3 | 3½ | 4 | 4½ | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Resulting income | $50 | 64 | 82 | 105 | 135 | 172 | 219 | 279 | 355 | 452 | 574 |

TABLE 40-2

**Income in 2000 under Various Conditions Starting with a 1950 Income of $50 per Person**

| Annual Percentage Increase in Population | Annual Percentage Increase in Income | | | | |
|---|---|---|---|---|---|
| | 2 | 3 | 3½ | 4 | 5 |
| 0 | $135 | $219 | $279 | $355 | $574 |
| 1 | 82 | 135 | 172 | 219 | 355 |
| 1½ | 64 | 105 | 135 | 172 | 279 |
| 2 | 50 | 82 | 105 | 135 | 219 |
| 3 | 31 | 50 | 64 | 82 | 135 |

The actual increases in total income that may be possible will be considered in the chapter to follow, but for preliminary purposes we may note that since 1865 the annual increase in total American income has averaged about 3.5 percent. If this rate were to be realized in a country such as Burma over the next fifty years, Table 40-2 shows that income per person would rise to perhaps $280 if there were no population increase during the period, to perhaps $135 if the present rate of world population increase were to prevail, and to only $64—or by

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[1] The qualifications discussed in Chapter 27 regarding the direct comparability of such an estimate should be recalled.

$14—if population were to increase at a 3 percent rate. Note again that these results depend directly on our conclusion that increases in total income and population can be treated as independent. If this is correct, it follows inevitably that rapid population growth involves a proportionate reduction in the rate at which income per person will rise.

### The Case of India

Can we go beyond this assumed independence of the growth of income and population? In the case of India it appears from a careful study by Coale and Hoover that rapid population growth will retard the growth of total income.[2] One reason is that, over the next thirty years on which the study concentrates, rapid population growth would add relatively little to the labor force (most of even the 1986 labor force having already been born).[3] On the other hand, rapid growth greatly increases the sums required for education, housing, and general welfare—at the expense of investment designed to expand production and income. It is worth stressing that the estimates that follow are *not* a prediction regarding India's future development; rather, they are designed to show the effect of differences in the rate of growth of population on an *assumed* pattern of growth of income—which is exactly what we are interested in. Three estimates of fertility (which for our purposes can be taken as equivalent to birth rates) are used: "high fertility" assumes a continuance of present fertility; "medium fertility" unchanged fertility until 1966, and a 50 percent decline between then and 1981; and "low fertility" a 50 percent decline by 1981 starting at once. Finally, a sharp decline in death rates as a result of development is assumed—a point to which we shall shortly return.

The first set of figures in Table 40-3 deals with *total income,* whereas the last two sets deal with income per "consumer" (which can be taken for our purposes as approximating income per person). The first set of estimates suggests that not only will total income increase more rapidly as fertility declines, but that no significant rise in the rate of increase in income is likely until fertility declines. The second set of estimates gives an indication of the impact on living levels that is involved. The difference between high and low fertility is the difference between a 38 percent and a 95 percent increase in average Indian living levels over thirty years. Finally, note that under the impact of high fertility the rate

[2] Ansley J. Coale and Edgar M. Hoover, *Population Growth and Economic Development in Low-Income Countries: A Case Study of India's Prospects* (Princeton, N. J.: Princeton University Press, 1958).

[3] The authors are convinced that extending the analysis over a longer period would not significantly alter their overall conclusions.

TABLE 40-3

Indian Income Growth with Different Rates of Population Growth

| | 1961 | 1966 | 1971 | 1976 | 1981 | 1986 |
|---|---|---|---|---|---|---|
| (Annual percentage increase) | | | | | | |
| Total Income | | | | | | |
| High fertility | 3.3 | 3.3 | 3.4 | 3.4 | 3.5 | 3.5 |
| Medium fertility | 3.3 | 3.3 | 3.4 | 3.5 | 3.7 | 4.0 |
| Low fertility | 3.3 | 3.5 | 3.7 | 3.9 | 4.2 | 4.5 |
| (Indices, 1956 = 100) | | | | | | |
| Income per consumer | | | | | | |
| High fertility | 107 | 114 | 120 | 126 | 132 | 138 |
| Medium fertility | 107 | 114 | 121 | 131 | 148 | 170 |
| Low fertility | 108 | 117 | 128 | 143 | 165 | 195 |
| (Annual percentage increase) | | | | | | |
| Income per consumer | | | | | | |
| High fertility | 1.4 | 1.2 | 1.0 | 1.0 | 0.9 | 0.9 |
| Medium fertility | 1.4 | 1.2 | 1.2 | 1.6 | 2.1 | 2.8 |
| Low fertility | 1.5 | 1.6 | 1.8 | 2.3 | 2.9 | 3.4 |

SOURCE: Gasley J. Coale and Edgar M. Hoover, *Population Growth and Economic Development: A Case Study of India's Prospects* (Princeton, N. J.: Princeton University Press, 1958), Tables 37 and 38.

at which the average living level improves slows down over the period—from 1.4 percent to a mere 0.9 percent—while under low fertility the rate of improvement more than doubles—from 1.5 to 3.4 percent. The case for an immediate decline in fertility in a country such as India is hard to deny.

## Death Rates and Development

We have just considered the impact of population growth on the rate of development; now let us consider the impact of development on population growth, starting first with death rates and then covering birth rates in the section that follows. In any year the difference between the actual birth rate and the actual death rate gives the rate of population growth. In the United States, for example, our birth rate is roughly 25 per thousand and our death rate roughly 10 per thousand; the difference between them gives the rate at which our population is increasing—15 per thousand or 1.5 percent. At the present time death rates in different countries vary from less than 8 to 25 or 30 per thousand—or even more. Where the rate is below perhaps 14 per thousand it is the result of rapid population increase in the immediate past and could not be maintained if population became stable. This is so because the people who were seventy in 1950 were born in 1880, when our population totaled 50 million. The number who are seventy today, therefore, is far smaller than the number who would reach seventy if our population were to remain stable at 180 million. This means that the number of people in the age groups where death rates are highest is today small compared with what it would be if population were stationary. More specifically, although our actual death rate today is around 9.5 per thousand, which implies an expectancy of over one hundred years, in fact our actual life expectancy is only about seventy years. Thus very low death rates reflect not only the degree of development of a country but also the speed with which its population has been increasing. The Japanese rate at 7.7 per thousand, for example, is significantly lower than our own—not because their life expectancy is higher but because their rate of population growth has been more rapid. Hence all developed countries can look forward to *rising* death rates as the rate of increase in population slows down in the future.

Exactly the opposite prospect is faced by underdeveloped countries, where both the high death rates and the frequently low observed rate of population increase in such countries—despite high birth rates—reflect the continuing operation of the positive checks. Specifically, this means that people—at least until very recently—have starved to death in countries such as China and India whenever there was a crop failure, and they are undoubtedly still dying from diseases that could be prevented by a more adequate diet. But, in addition, people in many underdeveloped countries suffer from diseases that are not a result of dietary deficiencies and that can be eliminated at extremely low cost by modern public health measures. For example, in Ceylon an antimalaria campaign using DDT costing 15 cents per person was able to reduce the death rate in districts infected with malaria by more than 11 per thousand, which contributed heavily to an overall decline in the death rate from 20 per thousand in 1946 to less than 11 in 1954. Because the cost is so small relative to the results achieved, public health measures of this sort are among the very first things undertaken by any development program. In the Indian case it is estimated that over half the population lives in districts infected with malaria. If the antimalaria program, which is expected to be completed in 1961, is as effective as it was in Ceylon, it would by itself reduce the overall Indian death rate by more than 5 per thousand.

Moreover, rising production resulting from development also means that there will be a reduction in the importance of dietary-deficiency diseases. Even in Ceylon, which has a substantially higher level of living than either India or China, a quarter to a half of hospital admissions are for malnutrition, and the effect of higher incomes on children's chances of living results in the rich having appreciably more surviving children than the poor, despite the fact that the number born to the rich is significantly lower.[4] In the case of India the study by Coale and Hoover estimates that the death rate, which has already declined from over 30 per thousand in 1951 to perhaps 25 at the present time, will be as low as 21 by 1966 and 15 by about 1975. In short, if development is effective, it cannot help being accompanied by sharp declines in prevailing death rates in underdeveloped areas.

### Birth Rates and Development

What effect is development likely to have on birth rates? There seems to be a widespread feeling that the *mere effort* to raise living levels will reduce birth rates. But if there is a connection between living levels and birth rates, it would appear to be with living levels that have *actually risen.* Countries such as China and India, for example, have experienced substantial development, in the sense of increases in production, in the past. China's population is believed to have increased fourfold since 1700—which if correct would be appreciably faster than the increase in the population of France and not so very much slower than in the United Kingdom—while India's is believed to have increased from 150 million to not far from 400 million since 1800. Both improvements in technology and utilization of previously uncultivated land made these expansions possible. But the vast increases in output involved led neither to a significant improvement in average living levels nor to a significant reduction in birth rates: all that has happened is that vastly more people live on the verge of starvation.

It is of course true that, in general, countries with high living levels have lower birth rates than do underdeveloped areas. In the absence of any restraints birth rates ranging between 40 and 50 per thousand are quite possible. This is the range within which the Indian rate is believed to have fluctuated since 1880; students believe that the rate remains above 40, though the reported rate (which suffers from serious underreporting) is considerably lower. An unrestrained rate of 40 per thousand is therefore by no means extreme. In contrast, developed countries rarely have rates higher than 25 to 30 per thousand. But countries with wide differences in living levels may have similar birth rates, suggesting that major increases in living levels may occur without birth rates being affected. In Puerto Rico, for example, the birth rate has until very recently been substantially higher than the reported Indian rate and may even have been higher than the actual Indian rate (corrected for underreporting). But the Puerto Rican level of living is higher than the Indian—perhaps seven times as high on the basis of a comparison of incomes. Higher living levels may facilitate the introduction of birth control techniques or may increase the extent of abortion and, conceivably, continence. But, unless birth control devices actually become available as a part of the higher living levels, it is by no means certain the birth rates will be significantly reduced. In fact, it could well be that, until birth control devices become available, the effect of development will be to *raise* birth rates by improving maternal health and increasing the frequency of intercourse.

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[4] Theodore Morgan, *Economic Journal,* December, 1953.

## Population Growth and Development

In estimating the probable rate of population growth in countries subject to development, it follows that we cannot project current rates of increase, as these are heavily influenced by the positive checks which successful development will eliminate. It is for this reason that little has thus far been said regarding the rate of increase in world population. The rate of increase has steadily risen in the past—from 1 percent per year in the first half of this century to between 1.5 and 2 percent at the present time. But this sheds little light on what is likely in the future. Suppose, for example, that development eliminates positive checks but does not make preventive checks effectively available. A rate of 3 percent—or a difference of 30 per thousand in birth and death rates—would be probable in such circumstances. There are, in fact, exceptional cases where even higher rates of increase have been realized. Mexico, for example, has a higher rate, and the Hutterites, a religious sect living in the Dakotas, Montana, and Canada, have a birth rate of about 46, a death rate of less than 5, and a rate of increase of over 4 percent—which involves doubling in 16 years! But a 3 percent rate has prevailed in many different countries and at many different times. To cite some widely different examples, population increased at a 3 percent rate in the United States from 1800 to 1860, in Puerto Rico after its recent rapid economic development, and among the Arabs of Algeria and Palestine (before the establishment of Israel), when development was expedited by a rapid inflow of French and Jewish capital. It is increasing almost that rapidly in Ceylon, where the rate of increase has more than doubled since 1946 to 2.9 percent. And the Coale-Hoover study estimates that a rate of 2.6 percent will be realized in India if fertility remains unchanged—lower than 3 percent only because it is believed that development will not succeed in lowering the death rate below 15 per thousand.

In short, to expect a rate lower than 3 percent is almost certainly to anticipate either that the development program will not fully succeed, leaving positive checks in operation, or that birth control or abortion will be available to a significant extent. In the case of Japan, which is sometimes cited as a country that succeeded in raising its living level without restricting population growth, it is worth recalling that the death rate during most of the period of her modernization was 20 per thousand or higher and that abortion and infanticide (not fully reflected in the death rate) appear to have persisted, so that Japanese population increase was, in fact, restricted to a rate substantially below that which is possible under modern conditions.

### Wastefulness of High Birth and Death Rates

One final point regarding population and living levels is worth making: high birth rates, even when balanced by high death rates so that population is not increasing, are an extremely inefficient way of maintaining a population. For high birth and death rates involve substantial waste through investment in children who do not live to become productive. In India only a little more than half of the children born in any year live to be fifteen. It has been estimated that 3 percent of the Indian national income is devoted to maintaining those who die before reaching fifteen, contrasted with 0.1 percent in England.[5] If the production which thus is allocated to unproductive investment, over and above that allocated in England, could instead be added to productive investment, the rate of Indian capital formation would be significantly increased. To an important extent it is not low saving but wasted investment in children that is responsible for India's low rate of capital formation!

Moreover, where population is growing rapidly because high birth rates are not offset by high death rates, the percentage of those too young to work may be as much as 10 points higher than in a slowly growing country. For example, less than 57 percent of the Brazilian population is from fifteen to sixty-four years compared with over 66 percent in Sweden. The smaller percentage in the labor force of course reduces the amount that a given population can produce and throws an increased burden on those of working age.

### Some Conclusions

Although the assumption is probably unduly favorable for countries such as India (where rapid population growth will probably retard the growth of total income), the discussion just concluded suggests that, to the extent the increase in total income can be assumed to be independent of the increase in population, improvement in average living levels will depend entirely on the extent to which total income increases more rapidly than population. But we have also just seen that the growth of population is likely to speed up, as development brings a sharp decline in death rates, to as much as 3 percent annually unless birth rates decline. Let us next discuss, before considering the overall prospects for underdeveloped areas, the increases in production and total income that may be possible.

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[5] W. Lee Hansen, *Journal of Political Economy,* June, 1957, p. 260.

# 41

# Production in Underdeveloped Areas

## Possible Increases in Food Production

The basic requirement in underdeveloped areas is food. One way of obtaining more food is to grow more within the given country; another is to industrialize and obtain food in exchange for industrial products. For underdeveloped areas as a whole, the latter possibility appears to be of quite limited importance. True, countries such as Belgium, Holland, and Great Britain attained both high population densities and high living levels by becoming specialized manufacturing areas and depending on the rest of the world for food. Japan has been, and may continue to be, a manufacturing center for Asia in a somewhat similar fashion. But imported food depends on food surpluses elsewhere; hence specializing in mining or manufacturing, although it may aid a few countries, does not offer a general solution for underdeveloped areas unless the production of food can be greatly increased in such areas taken as a whole.

What are the prospects for increasing food production? The answer depends in part on what we mean by food. It is, for example, possible that use of land to produce algae known as *Chlorella* will prove to be the most efficient way of converting solar energy and the carbon dioxide of the air into edible material. The technique involves spreading plastic coverings over flat land areas to form shallow pools of water to which appropriate mineral nutrients are added. The resulting crop can then be harvested continuously and mechanically by extracting the *Chlorella* with filters and replacing the nutrients as they are consumed. Harrison Brown has estimated that if three times the cultivated area of the United

States could be devoted to algae culture, world food production might be increased roughly twentyfold.[1]

Intriguing as this sort of calculation may be, it is important to remember that not only has the technique still to be demonstrated; it is of a sort difficult to apply in underdeveloped areas. The level of agricultural yields in such areas is already higher than one might think. As the following table shows, yields *per acre* in Asia are as high as in Oceania (predominantly Australia and New Zealand) and 80 percent as high as in North and Central America. But Asian yields *per person* in agriculture are only 8 or 9 percent of the American and Oceanian levels. Specifically, in the United States 6 million farmers cultivate 360 million acres, an average of 60 acres apiece, while in India 75 millions work 320 million acres, or about one fourteenth as much per person. Thus techniques now in use in developed countries generally do not grow appreciably more per acre but, rather, grow roughly the same amount with vastly less labor. Although algae culture would theoretically permit much more to be obtained from a given land area, it would require little labor and great amounts of capital. As a result it seems much better adapted to the needs of developed countries, where labor is relatively

**TABLE 41-1**

**Agricultural Yields in 1947–1948** [a]

(In metric tons)

| | Yield per Hectare | Yield per Person in Agriculture |
|---|---|---|
| World average | 1.30 | 0.42 |
| North and Central America | 1.50 | 2.57 |
| South America | 1.39 | 0.48 |
| Europe | 1.34 | 0.88 |
| Oceania | 1.20 | 2.38 |
| Asia | 1.20 | 0.22 |
| Africa | 0.73 | 0.12 |

[a] Excluding the Union of Soviet Socialist Republics.

SOURCE: Food and Agriculture Organization of the United Nations, *Monthly Bulletin of Food and Agricultural Statistics* (Vol. II, No. 9, September, 1949); quoted from A. R. Oxenfeldt, *Economics for the Citizen* (New York: Holt, Rinehart and Winston, Inc., 1953), p. 86.

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[1] Harrison Brown, *The Challenge of Man's Future* (New York: The Viking Press, 1954), Chap. IV.

scarce and capital relatively plentiful, than to underdeveloped countries, where the situation is reversed.

Apart from algae, Brown's estimates of possible increases in worldwide food production are considerably less striking. He estimates that supplementary irrigation of 40 to 50 percent of the land presently under cultivation might double its yield, that an increase equivalent to present production might also be brought about through extension of the area under cultivation (largely in the tropics), and that foreseeable improvements in agricultural techniques, including improved plant breeding and selection, might bring about a further doubling in all areas, or a sixfold increase from all sources. Such a program would obviously require large capital expenditures: Brown estimates that merely doubling food production would require an investment of $100 billion. For perspective keep in mind that, at a 1.5 percent annual rate of increase, population will expand sixfold in 125 years.

### The Possible Increase in Indian Food Production

Suppose we turn from the general problem to the specific possibilities for increasing food production in a typical underdeveloped country such as India. There is no doubt whatsoever that much more can be raised than is now being grown, as Indian yields for rice and wheat are only about one third those achieved in Japan. There is, of course, no area of the world so intensively cultivated as Japan, with only 7,500 square feet per person under cultivation compared with 40,000 square feet, or more than five times as much, in India. Further, although only 15 percent of Japan is cultivated in comparison with 40 percent of India, extension of the cultivated area will probably be easier in India than in Japan—though relatively little reliance is being placed on extensions of cultivation in Indian development planning. If the area under cultivation could be increased and the level of Japanese yields attained, India would appear to be able to support a vast increase in population.

Several qualifications are in order. Only about 75 percent of Japanese dietary needs are supplied by domestic production, so that, even at Japanese yields, 10,000 square feet would be needed to support a person solely by domestic production. Nor is India in a position to draw upon the fisheries that have been important for Japan. Further, almost half of the cultivated Japanese land is irrigated by making use of the runoff from the nonarable 85 percent of the total land area. Although considerable expansion of irrigation in India is certainly possible to something ultimately approaching the Japanese percentage, the more land cultivated the less water from uncultivated lands will there be for irrigation. Finally, it is by no means certain that India will be able to achieve

Japanese yields on the much larger area under cultivation in India—but neither is it impossible. In short, a 50 percent expansion in the area under cultivation and a tripling of yields would appear to be about the maximum increase likely on any presently foreseeable basis. This would mean that food production would be four and a half times larger. Such an expansion is certainly conceivable *in time* even without resort to algae culture, but equally it will not be easy to achieve.

## The Probable Increase in Indian Food Production

Thus far we have been discussing what is possible. What is probable—as to both food and total production? India starts from such a low level in agriculture that impressive immediate progress seems likely, particularly if rainfall is plentiful. But although Japan underwent one of the fastest rates of development in history, Japanese food production, even optimistically estimated, increased less than 300 percent between 1850 and 1950, which works out at a little better than 2 percent a year, allowing for compounding. In fact, a more detailed study of the period from 1885 to 1915, when Japanese growth was highly impressive, concludes that the increase averaged 1.9 percent per year for agricultural output and 1.3 percent per year for agricultural output per acre.[2] On the other hand, the Second Indian Five Year Plan projected rates between 3 and 4 percent for the period from 1956 to 1961, and it appears that between 1950 and 1957 food grains increased by about 3.5 percent and aggregate agricultural output by between 2 and 3 percent per year.[3]

Overall, it seems fair to conclude that the achievement of a 3 to 3.5 percent annual rate of expansion of agricultural output for a sufficient number of years to cancel out variations in rainfall would be a substantial accomplishment. It is the lower of these rates that Coale and Hoover, after an extended examination of Indian agricultural prospects, believe is likely to prevail over the twenty-five years from 1956 to 1981. The 3 to 3.5 percent range will certainly be exceeded in years of plentiful rainfall, but it is rather unlikely to be exceeded for any extended period.

## Agriculture and Production as a Whole

In almost all developed countries the importance of agriculture has steadily declined. Predominantly this reflects the fact that as people become increasingly well off, they spend a declining percentage of their income on food. There have been underdeveloped countries where agriculture increased in importance; it is believed, for example, that the rural population of India *rose* from 50 to 70 percent of the total between 1850 and the present time. The increase was apparently caused by a relatively rapid improvement of productivity in the nonagricultural area, as factories replaced village industries, combined with an increase in population that was as rapid as the increase in *total* output. In such circumstances, if food is to remain constant as a percentage of total production—which is what one would expect in the absence of any increase in average living levels—then *more* effort must be devoted to agriculture to offset the *slower* rate of increase in the productivity of agriculture. In short, during the last century the increase in total Indian production achieved only an increase in numbers—thereby requiring food to remain a constant percentage of total production—rather than a rise in living levels, which would have led to a decline in the relative importance of food. As is to be expected, most development plans, which assume that living levels are going to be raised, provide for a more rapid expansion of total than of agricultural output.

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[2] B. F. Johnson, *Journal of Political Economy*, December, 1951.

[3] Wilfred Malenbaum, *American Economic Review*, June, 1959. Malenbaum's article is used extensively in the discussion that follows.

Is there any reason to believe that total output is likely to be easier to increase than agricultural output? We can establish a basis for answering this question by seeing how the broad factors responsible for the development of developed countries under free enterprise and under Communism apply in underdeveloped areas. That such factors continue to be of vital importance seems basically correct. The student should note, however, that underdeveloped areas have many unique problems, and that a substantial literature dealing in considerable detail with such problems has become available. The system of landownership, for example, often makes it legally difficult, if not impossible, to consolidate into a single economic unit the numerous small parcels that one farmer may own. In general, it is essential to keep in mind that the discussion in no sense represents a full consideration of all the manifold problems faced by underdeveloped areas.

## Technology and Underdeveloped Areas

A major advantage of underdeveloped areas is said to be that they can draw upon the technology of developed areas. In the main this is true. But, as already noted in connection with the Soviet Union, even among developed areas there are limits to technological exchange; differences in the system of measurement alone may necessitate substantial redesign if the borrowing country is to use available standardized parts and tools. Thus screw threads vary significantly from country to country, and an engine designed in inches cannot easily be manufactured by a machine tool calibrated in centimeters. Even more important, most research in developed areas is undertaken to save labor, a goal frequently achieved by using much additional capital. But in underdeveloped areas labor is plentiful and capital scarce. The implications of this state of affairs are much debated. One group believes that, just because they are available, the latest machines should be utilized even if they require large capital investment. There is no doubt that much is to be said for this point of view if rapid development is sought or likely to be achieved, for it permits the underdeveloped country to "benefit from backwardness" in acquiring industry that is up to date. The fact that Japanese equipment was consistently more modern than British machinery greatly intensified the difficulties faced by Britain's textile industry and helped explain how Japan was able to develop into a position where it could undertake to exchange textiles for food on a large scale. Certainly, where capital availability has reached the Russian level, only the latest technology makes sense.

But there are those who feel that, where capital shortage remains as acute as it is in most underdeveloped countries, available knowledge should be used to design equipment requiring less capital investment and meeting, in general, the special needs of underdeveloped areas. This is, however, by no means always easy. An underdeveloped country, with abundant coal but lacking the capacity to export goods in exchange for oil, needs for its railroads a simplified steam locomotive. But no company in the United States produces steam locomotives, and it is doubtful if very much research has been done on such locomotives anywhere in the Western world in recent years. This at least is a product used in the West. When it comes to a solar stove, which would permit India to utilize as fertilizer the cattle dung now serving as fuel, it is quite obvious that the West has no developed technology whatsoever to contribute.

It is by no means impossible that a country such as India will attempt the worst of both alternatives. There is immense pressure on a newly independent country to develop, for reasons of national prestige, a certain number of industries that require large capital investment—such as steel and petroleum refining. Yet, faced with an acute shortage of capital and the immediate need to expand employment opportunities for those underemployed in rural areas, India is also placing emphasis on the redevelopment of village industries. If such industries can compete with factory production, the case for them may be good; but in India they are to be encouraged by restraining competing factory products—which suggests that village industries are more costly than factory production and to this extent will lead to a lower total production than would otherwise be possible. The issue, moreover, is complicated by a noneconomic preference for village industries. Their previous decline was blamed on the British, so that fostering them—as Gandhi did when he wore homespun cloth—represented a form of resistance to British rule.

Several conclusions emerge. First, applying the technology of developed countries to underdeveloped areas will not be as easy as it might first appear. Second, determination of the appropriate technology in any particular case will also not be easy. And, finally, there is an urgent need for effort—both within and without underdeveloped areas—to be devoted to the creation of technology appropriate to such areas.

### Innovation and the General Social Environment

In developed countries we took for granted the fact that there would be innovators and concentrated on such things as the effectiveness of competition and the extent of social mobility—to name but two among many. In underdeveloped countries, the question of who is to innovate is vital. In many such countries there have been only two important social groups—peasants who worked the land and aristocrats who derived their income from landownership and whose function, if any, was to govern. Those in between—entrepreneurs in our terminology—were looked down on as either middlemen or moneylenders performing no useful function. Add to this the fact that the democratic leaders of such countries frequently have advanced concepts of welfare, derived from their education in developed countries, that make unacceptable large rewards such as those received by entrepreneurs during our own period of development, and the difficulties involved in relying on private enterprise should be clear.

On the other hand, able government administrators in underdeveloped countries are a scarce commodity. It is a major virtue of free enterprise that it recruits for positions of economic importance people of ability whose talents might otherwise be wasted because of their inability to pass the civil service examinations likely to be required of government administrators. We have seen that it took Russia an all-out educational effort for a decade to replace people of ability who were killed or who migrated during the Russian revolution, and that during that decade reliance was placed on free enterprise under the New Economic Policy. Particularly for countries which have just become self-governing, a shortage of trained administrators is likely to limit severely the effectiveness of the government as an innovator.

It may well be that the compromise between the two alternatives is likely, from the development point of view at least, to be worse than a forthright adoption of either. At the very least it is inevitable that government will concern itself with the course of development and that its concern will have repercussions on private innovation. In India, for example, the government has reserved for itself the development of certain areas such as railroads, iron and steel production, and the mining of coal, iron ore, and copper, and has also established a second category—including nonferrous metals, machine tools, essential drugs, commercial fertilizers, synthetic rubber, and road and sea transportation—which is to be "progressively state-owned" in that expansion is to be permitted only in the government sector. Turning to incentives, a maximum limit on incomes in India has been officially proposed; the emphasis is certainly quite different from the Russian willingness to use material rewards lavishly to achieve its ends. Most important of all, as just noted, the production of a considerable variety of consumer goods by village industries is to be encouraged by restraints on large-scale production, which include differential excise taxes, direct prohibition of the production of certain items, and prevention of the further expansion of the capacity of large-scale firms. The extent to which arrangements of this sort reduce the incentive for innovation by private firms seems obvious; yet India continues to rely heavily on private enterprise over a wide area of the economy.

### Capital Shortage and Economic Development

Let us next consider the role of capital formation. There is perhaps more general agreement regarding the need for additional saving and capital formation to expand production in underdeveloped areas than in regard to anything else. But the very fact that the income of such areas is low means that the needed increases are difficult to achieve. This is perhaps the classic case of to him that hath shall be given. For in underdeveloped countries that are not developing, saving may well amount to no more than 4 to 6 percent of the national income—contrasted with three or four times as much in countries such as the United States, Canada, and Japan and five or perhaps even six times as much in Russia.

Where countries actively seek development, there is little doubt that this percentage can be raised. In India, for example, half way through the Second Five Year Plan the rate of monetary net saving was estimated to have reached 7 percent, with perhaps another 1.5 percent of nonmonetary investment, predominantly in rural improvements. Perhaps 3 of the 7 percent consists of capital formation resulting from government development outlays and 1 percent is provided by retained corporate earnings. The level of living is, however, so low that even India's socialistically inclined government feels itself unable to raise by taxation for all government purposes more than 10 percent of the national income; and of the roughly 90 percent of income left at the disposal of individuals, only in the order of 3 percent is saved.

Comparisons of net saving between developed and underdeveloped areas are difficult because of the differing importance of depreciation. But estimates are available of India's gross saving (equals gross investment and gross capital formation) as a percentage of India's gross national product; Malenbaum estimates that gross saving increased from 9 to 13 percent between 1950 and 1956–1958.[4] If his estimate is correct, the Indian rate is not greatly below the 15 percent level that has prevailed in the United States in recent years.[5] It is, however, much below the rate that has prevailed in the Soviet Union.

### Capital-Output Ratios in Underdeveloped Areas

There has been a great deal of interest in recent years in capital-output ratios in underdeveloped areas—and especially the marginal ratio relating the increase in capital to the increase in output. We have noted already that the ratio has been in the order of 3 to 1 in the case of developed countries such as the United States, and it does not appear to have been much different thus far in the Soviet Union. An overall ratio of this sort should be used with care. If the emphasis of this volume on the importance of technology is correct, then the stability of the ratio reflects, more than anything else, the stability of the rate of technological improvement, for changes in the rate of improvement will obviously affect the ratio, as technological improvements may make an expansion of output possible without an expansion in capital.

The caution with which such estimates should be used can be illustrated with reference to India. Early theoretical studies in the Indian case, looking particularly to the character of capital investment required, came to the conclusion that the capital-output ratio would be somewhat lower than usual—perhaps in the order of 2.5 to 1. But Malenbaum's estimate of the actual ratio for the period 1950–1957 is 4 to 1. We obviously do not yet know enough about the factors involved to predict capital-output ratios with any degree of certainty.

### Prospective Increase in Total Indian Production

Effective technological adaptation and development, significant saving, and conditions favorable for innovation are essential if development is to take place. They will not be easy to achieve in India, where the low level of living makes it hard to take resources from consumption for either research or saving, and the conflict between an approach relying primarily on government and one relying primarily on free enterprise, by promoting uncertainty as to which course will be followed, adds to the difficulty.

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[4] *Ibid.*

[5] For details, see Table 33-1.

Under the circumstances, what is likely to be the overall rate of increase in real income in India? Malenbaum estimates that the increase between 1950 and 1958 was 3.5 percent per year, and the study by Coale and Hoover concludes that a rate in this vicinity can probably be maintained. The rate of increase called for by the various Five Year Plans is in the order of 4.5 to 5 percent annually. But India has thus far benefited from the considerable excess industrial capacity that existed at the start of the planning period. Between 1950 and 1954 output increased significantly more rapidly than between 1954 and 1958. There is, in short, no evidence that the Indian economy has "taken off" or that the recent 3.5 percent rate of increase will necessarily continue in the future. For perspective keep in mind that, since 1865, total American production has increased at only a 3.5 percent rate. In short, it seems fair to conclude that maintenance by India of a rate of increase in overall production in the range of 3 to 4 percent for any extended period will be a considerable achievement. In fact, a recent United Nations report was unwilling to estimate the possible rate of increase for underdeveloped areas as a whole at higher than 2.5 percent, though this estimate has been much criticized as being unduly pessimistic.[6]

### The Contrast between India and China

Nothing is likely to be more important in deciding the direction taken by the underdeveloped and uncommitted areas of the world than the relative performance of the Chinese and Indian economies. Between them these nations contain over a third of the world's population and well over half of the population of all underdeveloped areas. There can be little doubt that, if one or the other is outstandingly successful, its example is likely to be followed by the rest of the underdeveloped world. We have seen that India has raised her gross saving rate to 13 percent of income and has achieved an annual rate of increase in agricultural production of perhaps 3 percent and in overall production of perhaps 3.5 percent. What has China been able to achieve in recent years?

Very little information is available with which to answer this question. The best estimates appear to be those made by Ta-Chung Liu and Kung-Chia Yeh.[7] According to their estimates, Chinese agricultural production from 1952 to 1959 appears to have increased at an annual rate of around 3 percent—or approximately the same rate as that in India. But, in contrast to the Indian experience, where agriculture and total production increased at roughly the same rate, Liu and Yeh believe that the rate of increase of total production in China averaged about 6 percent from 1952 to 1957 and then at least doubled to over 12 percent in both 1958 and 1959 under the influence of the "great leap forward." These estimates may well exaggerate the difference between the achievements of the two economies, though Liu and Yeh's estimates are based on a quite drastic scaling down of Communist claims. But, although later work may reduce—or conceivably increase—the size of the difference, it seems likely that a significant difference will remain.

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[6] *Measures for the Economic Development of Underdeveloped Countries* (New York: United Nations, 1957).

[7] *American Economic Review,* Proceedings, May, 1961.

The last two years covered by Liu and Yeh's estimates include the period when Chinese agriculture was reorganized into "communes," in which family life is replaced to a considerable extent by communal living. It seems likely that what the Communists have described as the "crop failure" of 1960, which was sufficiently severe to cause the Chinese to import food during the winter of 1960–1961, may reflect—in part, at least—difficulties encountered in connection with the communes. But it is not yet possible to measure the extent of the failure. Quite possibly the experiment may cause widespread starvation, as did the collectivization program in the Soviet Union during the winter of 1932–1933. At that time the press freely predicted that the collectivization program had "failed" and that the regime was in serious trouble, but the predictions turned out to be wishful thinking. The Chinese have certainly run into difficulties, but it is too soon to know their full magnitude or their long-range impact on the rate of development of the Chinese economy.

### Some Explanations of the Contrast

What explains the apparent difference in performance? First and most obvious is a higher rate of capital formation. According to Malenbaum, while gross capital formation rose from 9 to 13 percent of the gross national product in India, it appears to have increased from 10 to 22 or 23 percent in China, making the *increase* in the latter case three times larger. The higher rate is mainly the result of the willingness of the Chinese government to absorb a far larger—perhaps two and a half times larger—share of production than does India. To achieve this the Chinese have been prepared to place a far heavier burden—perhaps as much as three times heavier—on agriculture. In part this has been done by taxing agriculture heavily; but, in addition, the ratio of the prices of the things the agricultural sector sells relative to the things it buys has been set in such a way as to "exploit" agriculture. In so doing the Communists are following the Japanese example, where rapid accumulation by private businessmen was facilitated by making the peasants bear a relatively large share of the total tax burden.

Other factors responsible for the superior Chinese performance are summarized by the unusually low capital-output ratio of 2.2 to 1. The percentage of investment in agriculture and the capital-output ratios in agriculture do not appear to be greatly different in the two countries. But in China the percentage invested directly in industry has been much higher, and the percentage devoted to transportation, communication, and services much lower, than in India. It may be that the immediate increase in output from investment in industry is greater than from investment in other areas. But Malenbaum estimates that in India the capital-output ratio for industry is perhaps twice as high as in China, so that differences in the distribution of investment cannot explain the differences in the overall capital-output ratios.

One matter of major importance is the different handling of "rural unemployment." We have already mentioned that a great deal of labor is wasted in underdeveloped areas because much labor in agriculture is needed, if it is needed at all, only for planting and harvesting. Because it is "free," the Chinese Communists have been willing to use this labor lavishly on irrigation, flood control, road building, reforestation, and general agricultural improvements. In fact, they have used it so lavishly, on such relatively unproductive uses as back-yard steel furnaces, as to produce a labor shortage. One minor result has been a reduced emphasis on birth control; but, much more important, the shortage undoubtedly had much to do with the development of the communes, which had the immediate result of enabling the Communists to force people to work very long hours and to mobilize the labor of women by replacing the economically inefficient private preparation of meals with community kitchens. Obviously, considerable compulsion has been necessary to establish the communes, but they have undoubtedly made available for capital improvements much labor that would otherwise have been wasted.

In contrast, India has placed more emphasis on relatively inefficient "cottage industries," protected by various restraints imposed on more efficient, large-scale firms. But relatively little production has been achieved by cottage industries—and little unemployment has been eliminated. Nor have the "community development" schemes been able to channel much of the unutilized labor into local improvements. In part the reason has been that India has chosen to proceed on a voluntary basis; but the problem of how both the costs and the benefits of irrigation or roads or reforestation are to be apportioned, when there is private ownership of unequal amounts of land, is so complicated as to make progress on a voluntary basis extremely difficult.

### Differences in Industry

In India private investment in industry has tended to take place mainly in urban areas, which frequently offer benefits to the individual entrepreneur. But, although such investment does furnish employment for those leaving rural areas, the cost of providing the necessary urban facilities is expensive and falls in the main on the government, making the *total* capital requirements of urban industrialization high. In contrast, the Chinese have restricted migration to urban centers and have stressed "modern small-scale industry" located in relatively small towns, thereby undoubtedly reducing the overall capital cost of bringing unemployed agricultural labor into the industrial labor force.

There is, again, evidence that India is given to somewhat grandiose schemes—large dams, steel works, oil refineries—that do not always yield immediate results because they require much complementary capital formation (which is not always provided for) and skilled management before they can be operated efficiently. The Chinese also have their showplaces, but, perhaps in part because of inferior transportation, they appear to have decentralized to a greater extent. Thus, in addition to seventy-three large steel centers, they are also building a number of relatively efficient "medium furnaces" to supply the needs of specific areas. Note that this is just the sort of improvisation that one would expect of private enterprise. But steel in India is allocated by the government and expansion is subject to government control, so that the usual flexibility of free enterprise is largely eliminated. In short, it appears that the Chinese have been more successful than the Indians have been in adapting techniques of production to their specific needs.

Finally, it appears that China has benefited from greater standardization than has India. The Indian textile industry, for example, is said to produce a greater variety of counts per million yards than does any other country in the world, whereas the Chinese output is quite standardized, thereby eliminating the time spent in adjusting looms to different counts. Standardization clearly increases the output that can be expected from a given amount of capital, though, of course, it reduces the range of consumer choice.

### Some Preliminary Conclusions

The Chinese achievement would not have been possible without forced labor, forced saving, and restrictions on migration—in short, without compulsion. One may also argue that Communist China is following the lead of the Soviet Union in exploiting the present generation for the benefit of future generations. On the other hand, it may well be that, when starting from a low level, an initially larger amount of resources devoted to development will "pay off" very rapidly indeed even in terms of available consumption, so that it is not certain that the present Chinese generation will be "exploited" for very long. In fact, the reluctance of the Indian government to reduce present consumption, which presumably explains why it is unwilling to devote a larger percentage of the national income to development, could conceivably mean that the present Indian generation will receive, over its lifetime, *less* consumption than the present generation in China.

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# Prospects for Underdeveloped Areas

## Prospects without Preventive Checks

In my judgment the prospects for the development of underdeveloped areas, within the framework of free enterprise and with a considerable measure of political freedom, depend to a major extent on the prospects for population limitation. So far the attempt has been made—perhaps not with complete success—to discuss the issues involved with reasonable objectiveness. The present chapter represents, to a considerably greater extent, the statement of a point of view. It is therefore only fair to stress that the entire emphasis of this presentation on population problems is unusual. Most of the literature on underdeveloped areas has concentrated on discussing what is needed to increase production. Even then the emphasis has been on saving and capital formation, with resources and technology receiving relatively little attention.

Because of this unusual emphasis on population, it is important that the case should not be overstated. *Limited progress* may well be possible *in the near future* with *no greater population limitation than in the recent past.* M. K. Bennett, for example, an authority on food production, has concluded: "If, now, I am obliged to face the question: *can* the world's population possibly grow between 1950 and 2000 at its rate of growth from 1900 to 1950, implying an addition of 1,200 million people to the count, I will say it *can,* and it *can* do so with rising consumption levels."[1]

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[1] M. K. Bennett, *The World's Food: A Study of the Interrelations of World Populations, National Diets, and Food Potentials* (New York: Harper & Brothers, 1954).

*It is important to stress that this may well be true.* Nothing in what has been said denies the possibility that, if we are content with a rise—any rise—in consumption levels over the next fifty years, such a rise may well be possible with no greater limitation of population than took place between 1900 and 1950. But it is important that the implications of the three qualifications with which Dr. Bennett hedges his statement should be clearly understood.

First, the rate of increase is specified as that which took place between 1900 and 1950. But during this period, as a result of the operation of the positive checks, the rate of increase—1 percent for the world as a whole—was not only less than that which presently prevails but much less than is likely under modern development programs unaccompanied by the use of preventive checks. Specifically, recall that during most of the period of her development the Japanese death rate was 20 or more per thousand, but Ceylon is undertaking development with a death rate of 11 per thousand. Again in the case of India from 1891 to 1921 the annual growth of population averaged one sixth of 1 percent; from 1921 to 1951 it averaged 1 percent; it is now close to 2 percent; and the Coale-Hoover study estimates that, with present fertility, it will soon reach 2.6 percent even if the death rate (at present 25 per thousand) does not fall below 15 per thousand—almost one third *higher* than the *present* rate in Ceylon! In short, successful development efforts can be expected to bring about rates of population increase that approach 3 percent in the absence of preventive checks. But at a 3 percent rate the total increase in population by 2000 would be vastly larger than the figure Dr. Bennett mentions.

Second, the amount of the rise in consumption levels is unspecified by Dr. Bennett. A question to which developed countries need to give serious consideration is how long "just any rise" in consumption in underdeveloped areas will remain an acceptable objective to such areas. This is a matter to which we will return shortly.

Finally, Dr. Bennett confines himself to the next fifty years. After what already has been said it is necessary only to mention that the need for population limitation becomes increasingly urgent the longer the time period with which we are concerned.

## The Immediate Case for Preventive Checks

Let us illustrate the immediate case for preventive checks by reference to India, where we have the unique study by Coale and Hoover estimating the differences in average income that are likely to result, *with the development effort in each case otherwise unchanged,* if present fertility continues or if it is cut in half by 1986. Their conclusion is that, with unchanged fertility, income by 1986 may have increased by 38 percent to perhaps $85 per person, but if fertility is cut in half, the rise may be 95 percent to almost $120. Thus their study confirms Dr. Bennett at least until 1986: *some* improvement of living levels is clearly possible with unchanged fertility. But it equally confirms the emphasis of this volume: a *significant* improvement of living levels is possible only with reduced fertility, which of course can be achieved only through the use of preventive checks.

What lies back of these differences is fundamentally very simple. Even if we assume a capital-output ratio of only 2.5 to 1, to provide for a 1.5 percent increase in population would require net capital formation equal to over 4 percent of income, whereas, if the population increase were 2.5 percent, net capital formation would have to be over 6 percent. Nor is this all. So long as any rate of population growth is based on birth and death rates that are higher than necessary, there is the further waste of the resources used to support children who die unnecessarily before reaching the age at which they become economically useful. In short, the basic immediate issue is simply whether the very limited capital formation of underdeveloped areas should be used predominantly to increase numbers or to raise the living level of the present population.

The narrow margin on which the whole fabric of Indian development rests so long as fertility is unchanged is worth stressing. True, the best present guess is that income may be increasing at 3.5 percent, while population is not immediately likely to increase at more than 2.6 percent. But a decline in the growth of income to 3 percent and a rise in the rate of population growth to 3 percent—which is the rate that would result with present fertility and a death rate equal to that of Ceylon—would be *enough to bring the rise in average living levels to a halt.* It seems clear that population limitation is essential if there is to be any *certainty* of development.

Finally, population limitation is going to become *increasingly difficult in the future.* As development and health measures bring about a decline in death rates, without limitation population growth will speed up. But this in turn will bring an increase in the percentage of women of child-bearing age, which will make future limitation increasingly difficult. We may illustrate what is involved by pointing out that, given the present estimated death rate, the Indian population would be static with the birth rate prevailing in the United States. But if the death rate falls from the present level of perhaps 25 to 15 per thousand, stability will require a birth rate 60 percent of our level; and if the present Japanese death rate and age distribution were to emerge, immediate population stability would require a birth rate less than *a third* of our level!

Another way of putting this point is to state it in terms of death rates. We noted earlier that a death rate of 13 or 14 per thousand is consistent with our present life expectancy of seventy or so years. Hence, to achieve population stability, birth rates must ultimately fall to 13 or 14 per thousand. Where birth and death rates are now *higher* than this, stability could be achieved with birth and death rates at the level of 13 or 14 per thousand. But where death rates are now *lower*—as they are in most developed countries—*immediate* stability would require birth rates even lower than 13 to 14 per thousand. Realistically this means that for Japan and developed countries generally, immediate population stabilization requires such low birth rates as to be in effect impossible. Underdeveloped countries are not yet generally in this situation. But they will be if they do not undertake population limitation before health measures and development cause death rates to fall below 13 or 14 per thousand.

### The Ultimate Case for Preventive Checks

Thus far we have concentrated on immediate issues. But while the immediate case for the use of preventive checks is a strong one, the ultimate case is far stronger. Admittedly it involves concerning ourselves with the shape of a world we shall not live to see, but it is a shape that will be *immensely influenced by the decisions we make.* To illustrate the matter, let us set forth in extreme form the alternatives India faces in the longer-range future. In the last chapter we estimated that eventually India might well be able to grow 4.5 times as much food as she now produces. Hence one alternative open to India is to utilize this potential increase to support 4.5 times her present population at the living levels that now prevail. Population would then number over 1.5 billion and population density would be more than twice that of Japan at the present time. As food production may well be capable of increasing at a rate close to 3 percent a year, under this alternative population could expand at its 1.5 percent present rate until perhaps 2050 or even at a 3 percent rate until the end of this century.

But suppose, on the other hand, we examine the sort of expansion in food consumption per person that might be possible if there were no further increase whatsoever in Indian population. Under such circumstances would it be possible to provide the present Indian population with a diet not necessarily the same as that currently available to Americans but of *equal complexity and variety?* The average American consumes over four pounds of food (or drink) each day, containing perhaps 3,100 calories, whereas the average Indian consumes perhaps one pound containing perhaps 1,700 calories.[2] To provide this quantity of food there is under cultivation in the United States 100,000 square feet of land per person, with an additional 215,000 square feet in farms but not under cultivation.[3] In contrast, the total land area works out at 100,000 square feet per head in India, with about 40,000 square feet under cultivation. The part of American farms not under cultivation is, of course, of major importance in providing the dairy products, meat, and poultry that are so prominent in our diet; but if India were to produce these products, it would have to do so, not by using land for grazing, but by cultivating it so as to raise feed. To strike a rough equivalence, let us assume that the 215,000 square feet of uncultivated land incorporated in American farms is the equivalent of 80,000 square feet of cultivated land, which would mean that America cultivates the equivalent of 180,000 square feet per person to obtain our present diet. But if our previous assumptions about India are correct—that she will be able to expand her cultivated area by 50 percent to 60,000 square feet per person and raise her yields threefold to roughly the Japanese level—then it also follows that India will ultimately be able to provide her present population with a diet as complex and varied as that of the average American.

Thus, as we look to the relatively distant future, India may use her development potential to achieve one of two extreme alternatives: a vast mass of humanity living at, or close to, the subsistence level, or her present population achieving some approach to the living levels of the West. Clearly, if the latter objective is sought, population growth cannot continue for long. To achieve a diet comparable to ours, during every fifty-year period in the future that population continues to increase at the present rate, India will have to achieve a further doubling of her agricultural yields—to 6 times ours by 2000, 12 times by 2050, and 24 times by 2100. And if population growth were to rise to 3 percent, the increase in yields would have to be achieved twice as fast.

Further, if we look to total production rather than to food alone, it still seems likely that immediate population limitation will be needed if average living levels are either to be maximized or to approach Western levels. Conclusions on this score must remain tentative until we know more than we now do regarding optimum population. It is true that the benefits of mass production—or "increasing returns" in the technical sense—are most likely outside agriculture. But, since mass production has been achieved in America with a population less than half that of India, it is hard to resist the conclusion that the present Indian population is as large as, if not larger than, that which will maximize average living levels even in the relatively distant future. Obviously this judgment may be wrong if only because the future is inevitably uncertain. But to the extent that it is correct, it means that any further increase in population will reduce more or less permanently the living level that India can hope to achieve.

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[2] In these comparisons no allowance has been made for (1) differences in the average weight of Indians and Americans; (2) differences in climate; or (3) the rather remote possibility that India could become a permanent net importer of foodstuffs.

[3] No adjustment has been made for land used to grow exported agricultural products, as in recent years agricultural imports for consumption have somewhat exceeded total agricultural exports.

Hence, from both the immediate and the longer-run points of view, the case for immediate use of preventive checks seems clear. It has, in fact, been necessary to argue this matter so carefully only because we approach it from a Western point of view. Mr. Nehru, head of the Indian government, was prepared to put the matter much more simply when he said: "We should be a far more advanced nation if our population were about half what it is."

### Preventive Checks in China and India

One important reason why we as a nation are interested in development is to make sure that the underdeveloped areas not now under Communist control remain a part of the free world. There is no doubt that it is the prospect of rapid development that gives Communism its appeal for underdeveloped areas: to follow in Russia's footsteps and "achieve in a generation what it took capitalism a century to accomplish" is an enticing prospect, all the more because at least preliminary evidence suggests that the Chinese Communists have in fact been quite successful in following Russia's lead.

Is there any chance that what appears to be a clear advantage on the production side will be offset by more rapid population growth? Until 1955 China followed Russia's line in arguing that population problems were impossible under Communism. Around 1955 there was a sharp reversal of policy: birth control was made legal and actively encouraged, and attempts were made to raise the age of marriage. But after 1958 Chinese enthusiasm for birth control waned noticeably, leaving the prospective behavior of the Chinese population uncertain. One reason for the decline in enthusiasm was the labor shortage resulting from the effectiveness of the measures taken to utilize the rural unemployed. But it is quite possible that the increasing belief of Chinese Communists in the inevitability of a nuclear war with the West played a significant role in the lessening of enthusiasm. The overall result is that there has been little decline in the rate of growth of the Chinese population, which continues to increase by 2 to 2.5 percent per year.

In India, although there is widespread recognition of the problems caused by excessive population and sums have been appropriated by the government to encourage birth control, the first method tried, involving continence during fertile periods, turned out to be substantially ineffective. Currently experiments are being conducted with alternative devices and the results are said to be encouraging, but the matter remains on an experimental basis and no real effort has yet been made to reach the mass of the people. As a result, demographers do not believe that there has been any noticeable decline in actual birth rates, though the reported rate does show a decrease. Hence the decline in the death rate, caused by both development in general and malaria control in particular, has pushed the rate of population increase in India to around 2 percent per year.

Thus the superior record of the Chinese Communists on the production side has not as yet been offset by differences in the rate of population growth. What might be accomplished by massive efforts to make birth control available in either China or India is not clear. Few, if any, anticipated the speed with which the Japanese birth rate fell after birth control and abortion were made available, but the heavy Japanese reliance on abortion means that their experience cannot be duplicated in most underdeveloped countries, which do not have comparable medical facilities. Certainly if the full force of the Communist organization were put behind birth control in China, birth rates would probably fall rapidly. Whether something of the same sort can be achieved in India remains to be seen. But *without it it seems likely that Indian living levels will fall steadily behind those in China.*

## Our Concern with Underdeveloped Areas

To what extent are we directly concerned with the development of underdeveloped areas? Obviously a full answer transcends economics; successful development of underdeveloped areas may well be essential if the free world as we know it is to be preserved. But there is a more specific economic reason for being concerned with development. With 7 or 8 percent of the world's population, we today account for perhaps half the world's consumption of scarce materials, and the Report of the President's Materials Policy Commission in 1952 made it clear that in the future we shall become increasingly dependent on the rest of the world to provide us with the materials that we shall need.

Recall that developed areas are developing appreciably more rapidly than underdeveloped areas, so that present differences in living levels between the two are increasing and will almost certainly continue to increase. A vital question facing us is just how long *increasing differ-*

*ences in living levels will remain acceptable to areas on which the developed world will increasingly depend for its raw materials.*

### Our Role in Economic Development

How can the United States best contribute to the economic development of underdeveloped areas? One obvious—and obviously controversial—contribution would be for the United States to incur the research costs of finding and developing simpler and more effective contraceptives. The sums now being spent on contraceptive research are trivial; a tiny part of what has been spent to develop the atomic bomb would in all probability achieve vastly improved techniques in the relatively near future. To the extent that our emphasis on the preventive checks is justified, it is obvious that there is no more important—or more economically effective—contribution that we can make.

It is also essential that we achieve an understanding of the magnitude of the problem in order that the measures we undertake are related to what is required. There is reason to hope that, once reasonable restraint on population increase has been achieved, our increasing scientific knowledge will enable us to offset the heavy drain on our wasting resources that world-wide development entails. Then we could look forward to a wide and steady rise in general living levels—which we now take for granted but which actually has thus far been realized in only a small part of the world. It would be a serious mistake, however, to underestimate the difficulties that will have to be overcome.

What exactly can foreign aid accomplish? It can take many forms, but two are perhaps most important: technical assistance and capital contributions. Technical aid can be made available at small cost to ourselves and with highly productive consequences for the countries receiving help. We have discussed in some detail, however, the difficulties involved in adapting the technology of developed countries to the needs of underdeveloped areas; technical assistance should not be expected to work miracles.

As a contribution to crucial initial increases in investment, foreign capital contributions can be of real significance. But the sums required for effective development of underdeveloped areas as a whole are large. Just to raise the Indian rate of investment alone to the present Japanese rate has been estimated to require almost $2 billion of foreign aid annually—close to twice the amount currently available to *all* underdeveloped areas. In fact, the Third Indian Five Year Plan, running from 1961 to 1966, requires, if it is to be fully realized, that India receive an annual average of over $1.1 billion in foreign aid *in addition to* a quarter billion each year from the United States in the form of surplus agricultural products. Present aid programs, in short, are far from providing what will be needed if effective development is to be ensured.

### The Importance of Aid

The task, then, is immense. But equally the opportunity is unique and may be never offered us again. For the decision as to whether the world is to be populated by many billions living at or close to the subsistence level or by far fewer living at appreciably higher and rising levels is going to be made, consciously or otherwise, in the next century. At the very least, failure to achieve significant increases in living levels in underdeveloped countries may well result in the loss of our struggle with Communism, whose appeal is great in such areas precisely because it promises to do something effective about living levels. But even if we avoid this danger, the sheer magnitude of the effort required to raise living levels in underdeveloped areas may make the job next to impossible if world population reaches tens of billions before expansion is effectively restricted. Yet it is by no means certain that the world can exist indefinitely half developed and half underdeveloped; it may well be that achievement of world-wide economic development is essential if Western civilization as we know it is to survive.

# Section IV

# HOW THE LEVEL OF INCOME AND EMPLOYMENT IS DETERMINED

# 43 Introduction

## The Waste Involved in Severe Depressions

Why is the determination of the level of income and employment sufficiently important to deserve a whole section? The answer is simple: In 1933 national income was half, production two thirds, and employment three quarters of the 1929 level. This means that in 1933 one out of every four persons who wanted to work could not find a job. This unemployment, plus the decline in hours worked by those with jobs, resulted in our producing one third less goods and services than were produced in 1929. And this reduced production, when valued at the drastically lower prices that prevailed in 1933, led to a national income that was about half its 1929 value. Some understanding of what happened seems essential, if only to see what sort of steps may be needed to prevent a repetition of the Great Depression.

How great was the economic waste caused by the Great Depression? Valued in the prices which prevailed in 1960, the gross national product amounted to $208 billion in 1929 and to $273 billion in 1941. Between these years income increased by $65 billion, or an average of about $5.4 billion a year.[1] Suppose steady growth at the average rate of $5.4 billion a year had taken place over the period. Then income would have been $213.4 billion in 1930, $218.8 billion in 1931, and $224.2 billion in 1932, continuing until $267.6 billion was reached in 1940 and $273 billion in 1941. On this basis income over the period would have averaged just over $240 billion. Actually, because of the Great Depression, income in 1930 was only $188 billion and in 1940 had reached only $236 billion, so that the actual average for the eleven years following 1929 was only $187 billion. This means that during the eleven years in question production was *10 percent less than it had been in 1929 and over 22 percent less than it would have been had growth continued without interruption.* In the worst year—1933—output was 30 percent below what it had been in 1929 and 37 percent less than it would have been with uninterrupted growth. Obviously in any discussion of economic performance the factors responsible for waste of this magnitude deserve careful consideration.

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[1] To simplify, compounding has been disregarded.

### The Meaning of Full Employment

What has just been presented is a possible measure of "deficiency" unemployment, which, in general, occurs when we do less well than the best we have done in the past. It can therefore be measured by the excess of actual unemployment over the unemployment which prevailed in two periods of relatively "full employment"—for example, 1929 and 1941. More analytically, we may say that "deficiency" unemployment exists when there are more people seeking jobs than jobs seeking people, that "full employment" exists when there are as many jobs seeking people as people seeking jobs, and that "frictional" unemployment is the unemployment that exists, as a result of continued shifting between jobs, even after an economy has reached "full employment."

### Unemployment in Recent Years

Although these definitions are relatively straightforward, their application is made difficult because it is impossible to find in recent years bench marks comparable to those we used in measuring the unemployment of the Great Depression. Unemployment fell as low as 2.4 percent of the labor force in 1953 and averaged only a little over 3 percent between 1946 and 1953 if the clearly depressed years of 1949 and 1950 are eliminated; but in no year since then has unemployment fallen below 4.2 percent. Serious difficulties are raised by the absence of bench marks, as changes in employment are typically accompanied by magnified changes in output. In part the reason is that, as unemployment declines, the labor force and the hours worked increase. But, even if we eliminate the influence of these factors by concentrating on total man-hours worked, it is still true that a 1 percent increase in man-hours worked is usually accompanied by a much larger expansion of output. This does not, of course, mean that the last 1 percent of man-hours added to the total produces a great deal more than the average for all man-hours. Rather, it means that the influences causing the expansion of man-hours also cause previously employed man-hours to produce more by eliminating what has been called "on-the-job underemployment."[2]

Specifically, gross output per civilian worker increased 24 percent between 1947 and 1953 as unemployment fell from 3.9 to 2.4 percent, but only 6 percent from 1953 to 1959, when unemployment rose from 2.4 to 5.5 percent. Note that this comparison makes no allowance for changes in hours worked. But, in addition, in the latter half of the period there appears to have been an actual slowing down in the rate of increase in productivity quite apart from the increase in the percentage of unemployment. Under the circumstances, no very precise estimate of deficiency unemployment can be made. One possibility is simply to assume, first, that frictional unemployment in our economy "normally" amounts to 3 percent of the civilian labor force—which means that we have full employment in the sense of absence of deficiency unemployment when 97 percent of the actual labor force is employed—and, second, that each 1 percent change in unemployment will be accompanied by a 3 percent change in output.

### The Resulting Loss of Output

Applying these assumptions, it follows that, as unemployment averaged 3.9 percent in 1947, deficiency unemployment amounted to 0.9 percent, and output was 2.7 percent less than it would have been had full employment prevailed. Actually, in 1960 prices, the gross national product in 1947 was $323 billion, so that the "full employment" level would have been $332 billion ($323 divided by 97.3). Again in 1960 unemployment averaged 5.6 percent, making deficiency unemployment 2.6 percent and output 7.8 percent less than at "full employment." Hence the "full employment" gross national product in 1960 was $546 billion ($503 divided by 92.2). Using $332 billion and $546 billion as bench marks, we may now measure the waste due to deficiency unemployment in the same way as in the Great Depression. "Full employment" gross national product ($546 billion plus $332 billion divided by 2) would have averaged $439 billion, whereas the actual product appears to have averaged $416 billion. On this basis it appears that unemployment has been responsible for a waste of perhaps 5 percent of full employment output in the period since World War II.

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[2] The phrase was used in the statement of the Council of Economic Advisers before the Joint Economic Committee on March 5, 1961, which discussed the relationship between changes in employment and output in some detail, concluding that a 1 percent change in employment has typically been accompanied by a 3⅓ percent change in output. This conclusion is the basis for the simplified assumption of the text that a 1 percent change in unemployment is likely to be accompanied by a 3 percent change in output.

The problems illustrated by these calculations are more important than the calculations themselves, which are clearly subject to a considerable margin of error. In only two years—1952 and 1953—did the percentage of the labor force which was unemployed fall below 3 percent, and the assumption that a 1 percent change in employment is accompanied by a 3 percent change in output may possibly exaggerate the actual relationship. In fact, even keeping the 3 to 1 relationship, if we assume that frictional unemployment was "normally" 4 rather than 3 percent of the labor force, the estimate of waste would be cut in half. On the other hand, if the estimate of deficiency unemployment is reduced, the estimate of the amount of frictional unemployment that might be eliminated by appropriate changes in the economy would have to be increased, for, although the two can be distinguished analytically, they are obviously rather closely related in practice. If, for example, there were more jobs seeking people than people seeking jobs, it might well be that changes in the economy—such as devices to speed up transfers between jobs—would permit us to shift people between jobs faster than ever before, thereby reducing frictional unemployment and increasing the percentage of the actual labor force working at full employment. Overall, an estimate of 3 to 5 percent waste due to unemployment of both a deficiency and a frictional character appears reasonable for the period since World War II.

### Causes of Frictional Unemployment

In this entire section we shall be particularly concerned with the factors responsible for the unemployment that results from a deficiency of jobs. But let us first consider the factors responsible for frictional unemployment. In a dynamic economy marked by continuous changes of demand and technology, it is inevitable—indeed, essential—that workers shift among jobs. Note that *in general* changes due to dynamic influences need not result in any reduction in the number of jobs available. If less money is spent on one product, either because demand has changed or because technological improvements permit it to be sold more cheaply, then more money will be available for spending on other products; the number of jobs available will be reduced only if the money available is not in fact spent on anything else, in which case deficiency unemployment will occur.

But although it is essential for people to change jobs if the economy is to remain dynamic, it is not necessary for them to bear the full burden of the income loss that may be involved; in fact, the way in which the burden is shared has a lot to do with the extent of frictional unemployment in an economy. Specifically, there was a good deal of shifting of employees among government agencies during the war in response to shifting requirements. But little or no frictional unemployment resulted because there was a generally acknowledged convention among government agencies to do everything possible not to drop a man, even after there was nothing for him to do, until he had found another job so that he would not suffer a "break in service." The complete absence of reported unemployment in the Soviet Union may well be the result of a similar convention. In these cases the burden of change is borne by society and frictional unemployment is in effect concealed.

In private industry, on the other hand, keeping a man on when there is nothing for him to do reduces profits. It may sometimes be done in the case of executive or salaried personnel, but the likelihood of any such action decreases sharply as one moves down the income scale to casual or day labor. Viewed from the point of view of the individual, this may appear undesirable; but from the social point of view, the labor of a man no longer needed—whether or not he continues to be paid—is wasted. Under free enterprise the profit incentive causes firms to dispense with unnecessary workers rapidly, and the resulting loss of income gives the workers no longer employed a strong incentive to seek an alternative job. Hence in private industry, apart from unemployment insurance, practically the entire burden of change is borne by the individual and the amount of frictional unemployment is clearly visible.

The practical question is how much of the burden should be borne by society through the provision of unemployment insurance and how much should be placed on the individual. Society might guarantee that a man receive as unemployment compensation the highest earnings he has ever achieved and continue to receive them until a comparable job to the one he lost was provided in exactly the same location; but, if this were done, people might well receive unemployment compensation for rather extended periods! Actually, when unemployment is mainly frictional, so that by definition alternative job opportunities exist, the case for placing much of the burden on the individual, in order to provide him with an incentive to find alternative employment, is relatively strong. But when deficiency unemployment becomes important, so that there are not enough jobs to go round, the case for socializing the burden is far clearer. One way in which these conflicting objectives might be carried out would be to make the amount and duration of unemployment compensation depend on the level of total unemployment, increasing when the total was large and deficiency unemployment obviously present, and decreasing when the total was so small that most unemployment was of the frictional sort.

### Minimizing Frictional Unemployment

Without regard to how the burden is shared, it is clearly desirable to reduce frictional unemployment. Perhaps the most important thing that can be done is to increase the mobility of labor. Improved labor exchanges, whose function is to bring jobs and job seekers together, are of vital importance; unless a man knows that unfilled vacancies exist, he is likely to remain unemployed. But frequently the available jobs require different skills and are in different locations. Over a considerable range this gives rise to less difficulties than might be supposed: Americans typically change occupations and jobs rather easily. Between 1940 and 1950, for example, about 2.4 million workers quit agriculture, and between 1950 and 1960 the number was around 1.8 million—or a total of over 40 percent of all those engaged in farming in 1940. Note, moreover, that this shift was accomplished without help from the government—in fact, it is closer to the mark to say that it took place *in spite of* the government's agricultural aid programs.

On the other hand, when particular highly developed skills suddenly become obsolete, as happened when bottle-producing machinery eliminated bottle blowers, individuals suffer severely; those in the older age groups are unlikely ever to regain their previous earning capacity. The greatest hardships result when all the jobs in an entire area are eliminated, so that a whole community has to be abandoned, as happens when mines in remote locations are closed or division points on railroads are eliminated because diesels do not need the servicing required by steam locomotives. The geographical mobility essential in a dynamic economy is usually supplied by those who do not have families. When those with families—and especially those who own houses which are hard or impossible to sell—are also called upon to move, the burden becomes far heavier.

When major movements from occupations or locations become necessary, a strong case can be made for government aid, both in retraining and in relocating. In fact, as the level of unemployment has increased in recent years, some have placed the blame on the emergence of "structural" unemployment—in the sense of unemployment resulting from drastic changes in the "structure" of our economy—and have argued that direct government aid was essential if such unemployment is to be eliminated. It has, however, yet to be proved that "structural" unemployment is anything more than frictional unemployment made harder to eliminate by the existence of considerable deficiency unemployment. It may well be, therefore, that the most important contribution the government can make toward eliminating "structural" unemployment is to make sure that other jobs are available by minimizing or eliminating deficiency unemployment. Massive shifts obviously can and do take place without government aid when alternative job opportunities are available. Keep in mind that many of the more than 4 million who quit agriculture between 1940 and 1960 had to abandon their homes even when they were able to sell their land to other farmers wishing to expand their operations. In short, even if government aid is provided for humanitarian reasons or to speed up retraining and relocating, it should not under any circumstances be thought of as an alternative to minimizing deficiency unemployment.

### Frictional Unemployment and Inflation

Does it follow that the government should strive for permanent full employment to eliminate deficiency unemployment and minimize frictional unemployment? As we shall see when the problem of inflation is considered in Chapters 51 and 52, the conditions that caused overfull employment during the war also caused a level of total demand which made price increases inevitable. During the war the increases were restrained by price controls, but the delayed effect was responsible for much of the postwar inflation. The question we face, therefore, is whether under modern conditions jobs and job seekers can in fact be balanced without in the process creating inflationary pressures. It may, in fact, be true that under present conditions prices will move upward steadily even when deficiency unemployment is present. Hence a final appraisal of the desirability and importance of efforts to eliminate both deficiency and frictional unemployment can only be made after we have considered the desirability and importance of efforts to prevent inflation.

### An Outline of What Follows

The basic purpose of this section is to provide an understanding of the factors responsible for fluctuations in income and employment—and therefore in the level of deficiency unemployment. Fluctuations in income, however, are the same thing as fluctuations in the amount of money spent on current output. It will be worth our while, therefore, in the three following chapters to consider systematically factors that determine the quantity and speed of use of money in our economy. Then in Chapter 47 we shall examine directly why it is that spending fluctuates, placing special emphasis on the behavior of "strategic areas," such as housing, durable goods, and inventories. To provide both realistic examples of fluctuations and at the same time insight into the complications that are involved, Chapter 48 will summarize and attempt some analysis of the important fluctuations that have taken place in this century. Against this background of actual behavior Chapter 49 will present the formal analysis of income determination, drawing heavily on the work of John Maynard Keynes, while Chapter 50 will consider the measures that can be taken to reduce the magnitude of fluctuations. Finally, Chapters 51 and 52 will consider the problem of inflation in our economy, attempting to explain why it is that there has been a steady upward movement in prices since the start of World War II, and to examine what can be done to prevent such price increases in the future.

# 44 The Quantity of Money

## The Meaning of Money

People work hard to earn money. But what good is money? In the United States no one has the *right* to receive anything for money. Our most important kind of paper money (the federal reserve note) is simply "redeemable in lawful money at the United States Treasury, or at any federal reserve bank." But as the note is *itself* lawful money, all you would get if you presented it for redemption would be an exactly similar note—perhaps newer but otherwise identical. Why, then, do people work so hard for what is nothing but a piece of paper?

The answer is they expect that the piece of paper will be accepted in exchange for goods and services they want. This gives us our definition of "money": it is anything which is *generally accepted* in exchange or in the payment of debts. Note that in this definition it does not have to be *legally* acceptable; we shall find that our quantitatively most important kind of money—demand deposits—is under no circumstances *legal tender*. What makes demand deposits money is the fact that they are *generally accepted as a means of payment,* even though no one is legally compelled to accept them.

## The Functions of Money

The basic function of money, then, is to serve as a means of payment, making it possible for people to pay for the goods and services they buy or discharge the debts they have contracted. Historically, in economics texts money has been said to have three other functions: to serve as a "unit of account," a "store of value," and a "standard of deferred payments." To a significant extent these functions are intimately connected with money as a means of payment. If payment is to be made, the means must be broken up into convenient units in order that prices may be established and accounts kept. It is also essential that money should store value between transactions, as transactions cannot take place continuously; note that, as a store of value, money is an asset unique in that it is not subject to changes in *price* (which is the *money* value of any asset). Finally, so long as accounts are kept over time, money can be expected to serve as a standard of deferred payments. Of these functions, serving as a means of payment is undoubtedly most important, but the special qualifications of money as a store of value should also be kept in mind.

### The Acceptability of Money

Thus people are generally prepared to accept in payment something that has little or no direct usefulness because they expect that they will be able to exchange it for things that are useful. What is necessary to preserve general acceptability? The answer is, simply, that there must be some device to *limit the quantity* of whatever is used for money. For it is quite obvious that if something which has little or no direct usefulness became available in unlimited quantities, people would not continue to accept it.

Almost anything that is limited can serve as money; on the island of Yap granite rocks were once used. It would be hard to think of anything with less of the secondary attributes of money: the rocks could not be divided and then recombined by melting as can metals and they were far too heavy to carry around for day-to-day transactions. In fact, to use them at all required the development of a quite sophisticated bookkeeping system to determine at any time just how many boulders a man was worth. But Yap is a volcanic island and the granite rocks had one supreme advantage: their quantity could only be increased at great danger and expense by traveling in an open canoe to an island a thousand miles away.

If what was done on Yap appears foolish, would a man from Mars find it much more sensible to dig holes ten thousand feet deep in South Africa, to work in temperatures that would rise to 140° without air conditioning, to remove thousands of tons of material in order to extract, by a highly complicated process, a few ounces of gold—and then to ship the gold half way round the world to another hole called Fort Knox? There is a difference: the granite on Yap served *only* as a device to limit the money supply, while gold can also be used for making jewelry and filling teeth. This difference can be confusing. Historically the precious metals, more than anything else, have served as money. Limiting the quantity of such metals was no problem; if the quantity had not been limited, they would not have been classed as "precious"! But when paper money started to be issued, no such automatic limitation existed; hence one was created by requiring that the paper currency be exchangeable for a precious metal—usually gold. From this it was easy to conclude that in some sense the "ultimate value" of paper money depended on the fact that it was "redeemable" in a precious metal which was directly useful in other ways than as money.

Actually, as the Yap example shows, it is the *limited quantity* rather than the *alternative usefulness* that counts. During World War I, for example, gold flowed into Sweden as both Germany and the Allies sought to purchase Swedish goods. To prevent inflation the Swedish government refused to issue currency as rapidly as gold flowed into the country. The result was that the Swedish paper kronor, though without alternative usefulness, became *more valuable* than its gold equivalent because it was relatively more limited in quantity. Thus the fact that money is "backed" by a precious metal or by the "full faith and credit" of a government is of no more than psychological importance; what is important in maintaining the acceptability of money is that its quantity should in some way or other be effectively limited.

One way of limiting quantity, as we have just seen, is to link the quantity of money to a precious metal. Another is to trust in the discretion of the money-issuing authority. Power to issue money is generally claimed by the ultimate political authority of a state, the "sovereign" in a monarchy or the national "government" in a democracy. It can be argued that discretion has not worked out too well and that governments, as well as sovereigns, have found that it is easier to print money than to levy taxes, so that the temptation to pay for larger expenditures by expanding the currency has not always been resisted. Nonetheless, most countries have today given up automatic limitations in favor of reliance on discretion. Later we shall want to examine why this is so. But first let us examine our money supply in greater detail.

## Money in the United States

What do we use for money in the United States? The most obvious part of the answer is our paper money and subsidiary metallic coins, which taken together we may call "currency." But most payments, especially at the business level, are made not with currency but by writing a check. To write a check a person must have a demand deposit—one which is payable on demand. When payment is made by check, it is such a deposit with which the person making the payment starts and the person receiving the payment ends. The check itself is—quite literally—an order to a banker to transfer part of a demand deposit to someone else: "Pay to John Smith one hundred dollars (signed) William Jones." Transfers of demand deposits are responsible for perhaps four fifths of all payments that are made in the United States at the present time.

What about "savings" or "time" deposits—deposits that receive interest (in contrast to demand deposits, which do not) and technically cannot be withdrawn without waiting for a certain period after notice has been given (but which in practice will usually be paid on request)? If "money" is confined to means of payment, then "savings" and "time" deposits are not "money." It is true that banks with such deposits will sometimes issue a check payable to someone to whom the holder of a savings deposit owes money. Under such circumstances is not the savings deposit being used as a means of payment? Careful analysis of what takes place will show that this has not happened. The check issued by the bank is drawn against a demand deposit—either in the "commercial" department of a bank permitted to accept both savings and demand deposits or in another bank if the bank is permitted to accept only savings deposits. Thus, in writing the check, what the bank has actually done is to exchange the savings deposit for a demand deposit, and it is this demand deposit that is received by the person to whom money is owed. Hence it is the demand deposit that has served as the means of payment.

Undoubtedly this distinction is not easy to grasp, especially for those accustomed to think of their savings deposits as "money in the bank." The essence of the matter is that, when a savings deposit is withdrawn, it is exchanged for a demand deposit (or currency) in the same way that other assets are exchanged for demand deposits (or currency) when they are "sold." The difference is that in most sales the amount of money to be paid for the asset—in other words, its price—fluctuates. But in the case of a savings deposit the bank has, in effect, agreed to buy the deposit back at a fixed price, so that, instead of thinking of "buying" a savings deposit as other assets are bought, it is easy to think of the savings deposit as having continued to be "money" throughout. Here the federal government has been helpful with its savings bonds. For most people do think of "buying" a savings bond despite the fact that the obligation of the government to redeem or "buy back" such a bond is as definitely fixed as it is in the case of the savings bank.

## Liquid Assets and the Meaning of Money

When an explanation of the *behavior* of money is attempted, we shall find it is influenced by the "asset structure" of the holders of money balances. The assets involved may be arranged in terms of a "liquidity scale" based on the ease with which the assets can be converted into money. At one end of such a scale would be money itself, by definition completely "liquid," while at the other end would be all sorts of specialized assets, such as business plant and equipment or residential real estate. Obviously assets with guaranteed prices are highly "liquid"—so much so that they are called "liquid assets"—and there can be no doubt that they are likely to have a *relatively* greater influence on the use of money than have assets which are more difficult to convert into money. Moreover, until World War II, our only important liquid asset consisted of savings (or time) deposits. Under the circumstances some have argued that savings deposits are "money," or at least should be treated as "money."

One reason why this approach has not been followed has already been suggested: since 1940, to savings deposits have been added federal savings bonds, while federally insured savings and loan associations—which engage in mortgage lending but typically allow depositors to withdraw their funds on request—have become much more important. In any event, unless all assets are to be treated as "money," the line must be drawn at some point, and the point must inevitably be arbitrary, as the difference between liquid assets and other assets is clearly a matter of degree. Moreover, many apparently are as willing to increase their spending by *borrowing* (especially in connection with purchases on the installment plan) as by utilizing existing assets, so that the use of money is clearly influenced by "borrowing capacity" as well as by "asset structure." For all these reasons it seems best to confine "money" to the actual means of payment used in any economy. But when it comes to explaining the factors influencing the *use* of money, it is important to keep in mind that, although all assets and even borrowing capacity may influence use, assets that are highly "liquid" in the sense that they can readily be converted into money are likely to be especially influential.

## Currency in the United States

In the remainder of this chapter and in the following one we shall be mainly concerned with the factors that determine the quantity of money as here defined. Let us first consider currency—paper money, silver dollars, and subsidiary metallic coin—and then return to demand deposits. In continuing circulation in the United States are four types of paper money. Two types—United States notes and Treasury Certificates of 1890—are fixed in amount and quantitatively unimportant; for practical purposes they may be disregarded. Silver certificates are of more importance but account for only about 6 percent of total currency in circulation. They are "backed" by silver that the Treasury holds, but the monetary value of the silver has been set at a price well above the market value of the silver. Hence, if silver certificates were to be exchanged for silver and the silver sold on the market, the price received would be only a fraction of a dollar. Consequently, their silver "backing" has no influence on the value of silver certificates, which is maintained because the Treasury issues them in strictly limited quantities.

Actually there is a small but steady increase in the amount of silver certificates outstanding as each year the Treasury issues additional certificates in exchange for newly domestically mined silver, which is bought at its artificially high monetary value. The difference between the monetary and the market value represents a subsidy paid by the federal government to our silver producers, for which most economists find no economic justification whatsoever. But from the monetary point of view the result is that silver certificates are a type of paper money which increases slowly but steadily at a rate determined entirely by political considerations.

Notes issued by the Federal Reserve System are our final type of paper money. Not only are they quantitatively of overwhelming importance, making up over 85 percent of all our currency, but they alone fluctuate in response to economic influences. Hence we shall shortly want to consider them in greater detail in connection with the factors that determine the overall quantity of money in the United States.

Subsidiary metallic coins, issued by the Treasury to meet our need for small change, together with a small amount of silver dollars, today amount to about 8 percent of currency in circulation. As with the silver behind silver certificates, the metal in our metallic coinage has a value as money well in excess of its value as a metal; once again value is preserved because coinage is limited. There is, in fact, no reason why subsidiary coins have to be "printed" on metal rather than on paper except for the inconvenience of handling small bits of paper.

### The Influence of the Treasury on the Money Supply

It is essential to distinguish between the possible and the actual influence of the Treasury on our supply of money. If authorized by Congress, the Treasury could issue currency in unlimited amounts.

United States notes, for example, now fixed in amount and of negligible importance, were of major significance when they were issued by the Treasury in connection with the financing of the Civil War. In addition, variations in the quantity of demand deposits held by the Treasury can also have repercussions on the money supply. Just before World War II, for example, when the powers of the Federal Reserve System appeared inadequate, the Treasury aided the System by borrowing the funds it needed to buy the gold coming into the country instead of issuing additional gold certificates. Thus the Treasury "sterilized" the imported gold to prevent it from expanding the money supply. It is obvious, therefore, that the Treasury should receive consideration in any extended discussion of the factors influencing the money supply.

But at the present time *active* control over the money supply has in practice been delegated to the Federal Reserve System. We have seen that United States notes and Treasury Certificates of 1890 are fixed in quantity, whereas silver certificates increase at a set rate and subsidiary coinage increases passively in response to our varying needs for it. There is, moreover, no evidence that changes in Treasury holdings of demand deposits since World War II have been designed to influence the money supply. In fact, quite elaborate procedures have been worked out by the Treasury and the Federal Reserve System to eliminate the repercussions that would otherwise be caused by the sharp fluctuations which occur in Treasury balances on the dates when tax payments are due. Hence, so long as the potential importance of the Treasury is not lost sight of, it seems appropriate under present circumstances to concentrate attention on the Federal Reserve System.

### The Federal Reserve System

The Federal Reserve System consists of twelve regional banks presided over by the Board of Governors of the Federal Reserve System located in Washington. Membership in the System is compulsory for national banks (those chartered by the federal government) and voluntary for banks operating under state charters. In practice, although only about 50 percent of all banks (excluding mutual savings banks) are members of the System, member banks today hold around 85 percent of all demand deposits. Only smaller state-chartered banks remain outside, largely because they find certain requirements for membership too costly. Capital for the twelve federal reserve banks comes from member banks, but earnings of the reserve banks beyond a certain fixed return go to the Treasury. In sharp contrast to the situation for member banks, therefore, there is no incentive to operate the reserve banks so as to maximize profits.

The Federal Reserve System has certain "powers": it may buy and sell government bonds in the "open market"; it may vary the "rediscount rate" at which it stands ready to buy certain assets of its member banks; and it may change "reserve requirements"—the percentage of reserves that such banks are required to hold against their deposits. The meaning of these terms will become clear as we explain their operation. On the other hand, the reserve banks are themselves required to carry a reserve of not less than 25 percent in gold certificates against the deposits they accept and the federal reserve notes they issue.

What we are particularly interested in is the way in which the Federal Reserve System is able to control the quantity of money in the United States. But before we can understand how the System operates, it is essential to understand how it is that a banking system with partial reserve requirements is able to create money. Some may find this aspect of banking surprising. There are undoubtedly bankers who still do not believe that they create money and insist that they can only lend out the money deposited with them. We shall see that, from the point of view of a single bank, their insistence is understandable, but it is quite wrong for all banks taken together.

## Partial Reserves and the Creation of Money

To get at the essence of the matter, let us assume a country with $100 of paper currency and nothing else. In this case the total money supply will, of course, be $100. Now assume that a bank is established and is permitted to accept deposits payable on demand but required to keep a reserve against such deposits of 20 percent in paper currency. Finally, suppose that, on establishment of the bank, people decide that they can manage with no more than $50 of paper currency and deposit the remaining $50 in the bank. Then a simplified balance sheet of our bank—with the currency that has been deposited on the assets side and the demand deposits owed to those who deposited the currency on the liabilities side—would be as summarized in Situation 1. But we assumed that our bank was required to hold a reserve of only 20 percent; hence there is no legal reason why its balance sheet should not be as summarized in Situation 2.

**Situation 1**

| Assets | Liabilities |
|---|---|
| 50 Paper currency | 50 Demand deposits |

**Situation 2**

| Assets | Liabilities |
|---|---|
| 50 Paper currency (reserves)<br>200 Earning assets | 250 Demand deposits |

Note that in Situation 1 the bank has no assets earning interest, whereas in Situation 2 its "Earning assets" are at the maximum consistent with a 20 percent reserve requirement and $50 in reserves. Banks have many kinds of "earning assets"; two alone need be distinguished for our purposes: *government bonds* and *business loans.* Obviously, other things being equal, the closer a bank is to Situation 2, the larger will be its earnings. Hence, as banks are in business to make a profit, a bank will want to move from Situation 1 to Situation 2 as rapidly as possible.

But how can it? Where does the additional $200 of deposits come from? The answer is that our bank creates them—out of thin air, if you like. The process is simple: suppose there is a $200 government bond the bank would like to own; it buys the bond by offering the seller a $200 demand deposit (transferred to him by check in the usual manner). Or again suppose a businessman wants a loan of $200; the bank will simply credit him with a deposit of $200 in exchange for his agreement to repay $200 (disregarding interest) at some future time. In either case, total money, which amounted to $100 ($50 of paper currency and $50 of demand deposits) in Situation 1, has become $300 ($50 of currency and $250 of demand deposits) in Situation 2. Hence the bank certainly has created additional money.

### One Bank versus the Banking System as a Whole

So far, so good. But what would happen if the businessman, or the seller of the government bond, elected to withdraw in currency the $200 he had received? The answer is that the bank would have to shut up shop—*just as would all banks in the United States* if three quarters of the holders of our roughly $120 billion of demand deposits in member banks tried to convert them into currency! Currency in circulation in 1960 was less than $33 billion and member bank reserve balances less than $20 billion, so that there is no possible way in which $90 billion of demand deposits can be converted into the presently available quantity of currency and bank reserves. Hence the bank in Situation 2—as is true of all banks taken together in the United States—would face serious difficulties if the desire for currency on the part of holders of demand deposits were to increase sharply.

The difference between the two cases—which makes Situation 2 somewhat misleading—is that no individual owns any significant portion of the deposits in the United States. Had we complicated our example by assuming that the bank bought, not one $200 bond, but 20,000 1¢ bonds from 20,000 people or made, not one $200 loan, but 20,000 1¢ loans to 20,000 businessmen, we would have come closer to reality. And had we further complicated the matter by assuming that hundreds of separate banks were involved, we would have come even closer to reality. Because the individual bank is so small a part of the total picture, it is understandable that the individual banker should not always be aware of his role in creating money. But the basic point involved—which justifies the simplifications contained in Situation 2—is that, *if* any currency is left permanently in the banking system and *if* the system is required to hold in currency only a partial reserve (meaning any reserve less than 100 percent) against its demand deposits, then the banks of the system, acting jointly, will have the ability to increase the total quantity of money. In short, banks—as well as governments and counterfeiters—can create money.

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# The Quantity of Money (Continued)

## The Federal Reserve System and the Creation of Money

In the last chapter we demonstrated that banks can create money. The main problem with which this chapter is concerned is how the Federal Reserve System is able to control this ability to create money so as to be able to control the overall supply of money in the United States. To simplify the discussion, let us disregard banks which are not members of the System and assume, for the reasons already given, that the Treasury remains "passive." Given these simplifications, six main factors influence the quantity of money. Three of the six involve the powers of the Reserve System already listed: changes in reserve requirements, open-market operations, and changes in the rediscount rate. The remaining three include gold movements, changes in the use by banks of their excess reserves, and changes in the ratio of currency to demand deposits. We have said that the Reserve System is able to "control" the quantity of money. More precisely, this means that the powers of the Federal Reserve appear capable of offsetting any *probable* variation in the other factors; this is the sense in which it is correct to say that the Reserve System determines the quantity of money in the United States at the present time.

We can illustrate the influence of each of these six factors by reference to the summary of our monetary system presented in Situation 3. Note, first, that to the left there is a simplified balance sheet for all reserve banks and to the right one for all member banks. Note, next, that banks which are members of the Reserve System hold relatively little of their required reserves in the form of currency (as in Situations 1

**Situation 3**

| All Reserve Banks | | All Member Banks | |
|---|---|---|---|
| Assets | Liabilities | Assets | Liabilities |
| 40 Gold certificates | 40 Member bank reserve balances | 40 Reserve balances | 200 Demand deposits |
| 50 Other assets | 50 Federal reserve notes | 160 Earning assets | |

Reserve requirement: 20 percent.
50 Reserve notes + 200 Demand deposits = 250 Total money.

and 2) but rather in the main as deposits—usually called "reserve balances"—in the reserve banks; in the discussion that follows we shall, therefore, disregard reserves held in the form of currency. Note, finally, that, in preservation of the basic principle of all balance sheets, assets and liabilities in each case balance. Assets of the reserve banks consist of gold certificates and "other assets," which are similar to the "earning assets" of the member banks. Let us once again confine our attention to two assets: government bonds and "rediscounts," the latter a concept shortly to be discussed at greater length. Liabilities of the reserve banks include reserve notes and the reserve balance of the member banks, which, as we have seen, are used by the member banks to fulfill their reserve requirements. These same deposits, which are liabilities for the reserve banks, are, of course, assets for the member banks, who have, in addition, earning assets. On the liability side, in the case of member banks, we shall concentrate entirely on demand deposits, as they alone enter into the money supply, though in practice banks have many other liabilities (including time or savings deposits). Using this summary of our monetary system, we are now in a position to illustrate the way in which each of the factors influencing the quantity of money operates.

### Changes in Reserve Requirements

In Situation 3 reserve requirements are assumed to be 20 percent. In practice, member banks will, after 1962, be divided into two classes with reserves variable, at the discretion of the Board of Governors of the Federal Reserve System, between 7 and 14 percent for smaller banks and between 10 and 22 percent for larger banks. For the present discussion we shall assume that a range of from 10 to 20 percent approximates closely enough the probable fluctuations in actual reserve requirements. With reserve requirements at the 20 percent level as in Situation 3, total money amounts to $250. But suppose reserve requirements are reduced to 10 percent as in Situation 4; in that case total money can almost double, increasing to $450. It is obvious that by altering reserve requirements the Reserve System can influence the money supply.

**Situation 4**

| All Reserve Banks | | All Member Banks | |
|---|---|---|---|
| Assets | Liabilities | Assets | Liabilities |
| 40 Gold certificates | 40 Member bank reserve balances | 40 Reserve balances | 400 Demand deposits |
| 50 Other assets | 50 Federal reserve notes | 360 Earning assets | |

Reserve requirement: 10 percent.
50 Reserve notes + 400 Demand deposits = 450 Total money.

Two complications should be noted. In Situation 3 the ratio of demand deposits to currency is 4 to 1—roughly what it is in the United States at the present time. But in Situation 4 it is 8 to 1. There is no reason to believe that a change of this magnitude will be acceptable to money holders; it is quite probable that they will want a ratio closer to the original 4 to 1. Second, it is possible that, in certain situations, even though entitled to expand their deposits after the reduction of reserve requirements, banks will not do so but will instead hold reserves in excess of those required. But changes in the ratio of currency to demand deposits and in excess reserves are specifically on our list of factors influencing the supply of money and will shortly be discussed, so that further consideration of these complications may be temporarily postponed.

### Open-Market Operations

Let us again start with our basic Situation 3 and examine what would happen if the Reserve System decided to increase the quantity of money by means of an open-market purchase of a government bond. All this means is that the Reserve System buys a government bond from any holder of such a bond who is willing to sell; so long as its holdings of gold certificates are in excess of the 25 percent it is required to hold against its liabilities, the System is in a position to make such a purchase, just as was our individual bank in Situation 1. Suppose that the System purchased a $10 bond from any member of the public, paying for it with a check drawn on itself. After the individual had deposited the check in his bank and that bank had presented it for payment to the Reserve System, we would have Situation 5. Note that the quantity of money has increased by the amount of the purchase—from $250 to $260. But in Situation 5 banks find themselves with excess reserves; with a requirement of 20 percent they would need only $42 of reserves when in fact they have $50. Hence, again assuming that banks do not wish to hold excess reserves and also again disregarding the change in the ratio of currency to demand deposits that is involved, the $10 open-market purchase can ultimately result in Situation 6. Open-market purchases are also obviously capable of influencing the money supply.

**Situation 5**

| All Reserve Banks | | All Member Banks | |
|---|---|---|---|
| Assets | Liabilities | Assets | Liabilities |
| 40 Gold certificates | 50 Member bank reserve balances | 50 Reserve balances | 210 Demand deposits |
| 60 Other assets | 50 Federal reserve notes | 160 Earning assets | |

Reserve requirement: 20 percent.
50 Reserve notes + 210 Demand deposits = 260 Total money.

**Situation 6**

| All Reserve Banks | | All Member Banks | |
|---|---|---|---|
| Assets | Liabilities | Assets | Liabilities |
| 40 Gold certificates | 50 Member bank reserve balances | 50 Reserve balances | 250 Demand deposits |
| 60 Other assets | 50 Federal reserve notes | 200 Earning assets | |

Reserve requirement: 20 percent.
50 Reserve notes + 250 Demand deposits = 300 Total money.

### Rediscounting

When a businessman borrows from a bank, he is typically likely to be asked to sign a note agreeing to pay, for example, $1,000 and then to have the note "discounted," which involves deducting the interest beforehand. If the *discount* rate is 6 percent per year, $60 will be deducted and the businessman will be credited with only $940. In this case the *interest* rate being charged is almost 6.4 percent, as $60 of interest is being paid on a loan of $940. Discounted notes are an asset that the reserve banks stand ready to buy from member banks. This process involves discounting the note a second time; hence, when bought by reserve banks, a note is called a *rediscount* and the rate of discount involved is the *rediscount* rate. Although open-market operations are undertaken on the initiative of the Reserve System, rediscounting takes place on the initiative of the member banks, with the reserve banks posting the rates (which may vary among reserve banks) at which they stand ready to buy rediscounts. Starting once again with our basic Situation 3 and assuming that the member banks as a group decided to rediscount $10 of their earning assets, the initial result will involve no expansion of the money supply, as Situation 7 illustrates; all that has happened is that, in the case of the member banks, $10 of earning assets have been converted into $10 of additional reserve balances while, in the case of the reserve banks, the $10 increase in reserve balances has been matched by a $10 addition to other assets. But the ultimate result (continuing to disregard the possibility of excess reserves and the changes in the ratio of currency to demand deposits) will be the same as that summarized in Situation 6.

**Situation 7**

| ALL RESERVE BANKS | | ALL MEMBER BANKS | |
|---|---|---|---|
| Assets | Liabilities | Assets | Liabilities |
| 40 Gold certificates | 50 Member bank reserve balances | 50 Reserve balances | 200 Demand deposits |
| 60 Other assets | 50 Federal reserve notes | 150 Earning assets | |

Reserve requirement: 20 percent.
50 Reserve notes + 200 Demand deposits = 250 Total money.

We have now seen the way in which each of the three powers of the Reserve System operate; let us next examine the impact of the other factors which influence the quantity of money.

### Gold Movements

As was explained in Chapters 22 and 23, when international trade was discussed, gold flows in and out of the United States in settlement of the country's balance of payments. Suppose, again starting with our basic Situation 3, $10 of gold were to flow into the United States. The Treasury typically pays for imported gold with a check drawn against its account with the federal reserve banks, and then replenishes its account by depositing gold certificates. The primary impact of a $10 gold import—after the check issued by the Treasury has been deposited in a member bank and credited to the member bank's reserve balance and the Treasury has deposited an offsetting amount of gold certificates—is summarized in Situation 8.[1] What has happened is that demand deposits, reserve balances, and gold certificates have in each case increased by $10. But once again the banks will find themselves with $8 of excess reserves and the ultimate result can once more be the same as that presented in Situation 6, except that the reserve banks will end up with $10 of additional gold certificates rather than with $10 of additional bonds.

**Situation 8**

| All Reserve Banks | | All Member Banks | |
|---|---|---|---|
| Assets | Liabilities | Assets | Liabilities |
| 50 Gold certificates | 50 Member bank reserve balances | 50 Reserve balances | 210 Demand deposits |
| 50 Other assets | 50 Federal reserve notes | 160 Earning assets | |

Reserve requirement: 20 percent.
50 Reserve notes + 210 Demand deposits = 260 Total money.

### Excess Reserves

Thus far we have suggested that, in order to maximize their earnings, banks will move as rapidly as possible from Situation 1, in which they have no earnings whatsoever, to Situation 2, in which their earning assets are as large as they can be, consistent with reserve balances and reserve requirements. Is it ever likely that banks will, for appreciable periods, want to stop short of Situation 2, holding reserves in excess of requirements even though this means forgoing earnings? There are indeed such periods. One obvious reason for not using excess reserves is that banks may be unable to find "credit-worthy" borrowers—those with sufficient prospective ability to repay loans to warrant making them in the first place. It is clear that neither depositors nor stockholders benefit from loans that are defaulted.

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[1] The possibility that the importer of gold will want currency rather than demand deposits may be treated as a change in the currency ratio, which is to be discussed shortly.

But what about the purchase of assets such as government bonds? There is no reason why bonds of the federal government should ever be defaulted. For the federal government has, as we have seen, the power to create money; hence it will always be able to "pay off" its bonds in money that it has created for the purpose—though, of course, the ability of the money to purchase goods may be quite different from what it was when the bonds were originally issued. Why, then, if they are certain to be repaid, will not banks use their excess reserves to buy bonds so long as they yield any interest return? For any return, no matter how small, would appear better than receiving nothing whatsoever on excess reserves. The basic answer is that banks may anticipate higher interest rates in the future and prefer to wait for the rise rather than tie their money up when rates are "abnormally" low. If a bank anticipates that it will be able to get 3 percent during the last three years of a five-year period, clearly it will do better to hold its reserves idle for two years and then receive 3 percent rather than to accept 1 percent for the entire period.

It would, of course, do even better if it could receive 1 percent for the first two years and 3 percent thereafter. Suppose, in pursuit of this objective, a bank bought for $1,000 a bond offering 1 percent interest. The problem the bank would face is that, when interest rates rose after two years, the bond would sell for *less than* $1,000, the exact amount of the decline depending both on the maturity of the bond and on the amount of interest it paid. But—and here is the important point—it is perfectly possible for the decline in the value of the bond to have been would have received. If after two years the bank could sell the bond for greater than the $20 of interest ($10 times two years) that the bank only $970, then, even adding in the $20 of interest, the total it would have received from buying the bond would be only $990. Clearly the bank would have done better if it had held the $1,000 idle during the two years in question.

The only way a bank can avoid this danger is to buy bonds that are payable in two years or less. The difficulty with this proposal is that, when there is a *general anticipation that interest rates will rise,* everyone wants to make short-term loans and the interest earned on such loans falls to very low levels indeed. In the late thirties, for example, when excess reserves were widespread, the return on short-term federal issues dropped to a fraction of 1 percent at a time when long-term bonds still offered 2.5 percent. In fact, rates on short-term issues fell so low that the return on $1 million invested for ninety days was frequently less than $100; under the circumstances it is understandable that banks should find buying short-term bills not sufficiently remunerative to justify tying up their funds for even ninety days.[2]

In short, there are definitely times when banks find it desirable to hold reserves in excess of those they are required to hold. But, when banks hold excess reserves, the money supply is smaller than it would be if the banks had utilized all their reserves. Hence changes in the extent of excess reserves have an obvious influence on the quantity of money.

### Changes in the Currency Ratio

The general public can also influence the quantity of money by altering the distribution of its total money holdings between currency and demand deposits. Note that the Reserve System need not be involved, as the discussion of Situations 1 and 2 demonstrates. For in neither case was the System assumed to exist. What Situation 2 demonstrates is that, in a country with $100 of paper currency, the total quantity of money can expand to $300, provided a bank is established with a 20 percent reserve requirement and *the general public is prepared to hold five sixths of total money in the form of demand deposits and not more than one sixth in the form of currency.*

Since the Civil War there has been a long-term trend in the direction of increased reliance on demand deposits; an effect of this trend has been to bring about a greater increase in the quantity of money than would otherwise have taken place. But the most obvious impact of changes in the currency ratio on the money supply has been in connection with bank "panics." Note that all the discussion thus far has been in terms of the *creation* of additional money. But banks with partial reserve requirements equally have the power to *destroy* money. Still disregarding the Reserve System, suppose in Situation 2 that people decide they want $60 instead of $50 of currency; they can obtain it by simply demanding $10 of currency from the bank in exchange for $10 of their deposits. In that case Situation 9 will result. Note that in the first instance there is no change in total money, which remains $300. But with a 20 percent reserve requirement the bank should have $48 of reserves (20 percent of $240) when in fact it has only $40.

What can the bank do to meet the legal requirement? The answer is that it can destroy money in exactly the reverse of the way in which it created money. Previously it acquired assets in exchange for newly created demand deposits; now it acquires deposits (which can then be destroyed) in exchange for some of its assets. Specifically, suppose that

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[2] There were actually times when the return became negative because those holding federal securities were not subject to certain state and local taxes.

**Situation 9**

| Assets | Liabilities |
|---|---|
| 40 Paper currency | 240 Demand deposits |
| 200 Earning assets | |

Reserve requirement: 20 percent.
60 Paper currency + 240 Demand deposits
= 300 Total money.

the bank exchanges a $40 government bond for $40 of its deposits or receives $40 of its deposits in repayment of a businessman's $40 note. Then the bank will find itself in Situation 10, in which it has once more met all legal requirements. But—and here is what is important—the decision of the general public to increase its holdings of currency has brought about a reduction in the total money supply from $300 to $260.

**Situation 10**

| Assets | Liabilities |
|---|---|
| 40 Paper currency | 200 Demand deposits |
| 160 Earning assets | |

Reserve requirement: 20 percent.
60 Paper currency + 200 Demand deposits
= 260 Total money.

### Bank Panics and the Federal Reserve System

What induces the public to want to hold additional currency? When banks make loans or buy assets to earn interest, there is always the possibility that the loan will not be repaid or that the asset will decline in value. When this occurs, or when depositors fear that it will occur, a bank "panic" could result under the arrangements that prevailed until recently—not because people really wanted additional currency but because they feared that they might not be able to get it unless they demanded it at once. When no more than an individual bank is involved in a panic and its assets are basically "sound" (even though they cannot be exchanged for money at once), the harm is small. Another bank can buy the assets and in this way end the "run"; in the past the larger banks in New York and Chicago often helped out their "correspondent" banks in smaller cities in this way. So long as the assets are basically sound, the bank's depositors would in any event merely have to wait for their money until the assets can be sold or the loans repaid; but if loans are in default or assets have declined in value, depositors may not be repaid in full.

In the past, bank panics often involved, not merely an isolated bank, but a great many banks at the same time, threatening the banking system as a whole and having repercussions on the entire economy. We have thus far discussed the Federal Reserve System as if its primary purpose were to control the quantity of money. Actually it was established to do for the banking system as a whole during panics what New York banks often did for their correspondents: buy sound assets that might not otherwise be convertible into currency. In this way it was hoped that the Federal Reserve System would provide the banking system with sufficient flexibility to deal with sudden shifts in the public's desire for currency, and thus prevent panics. The main mechanism designed to provide this desired flexibility was the rediscounting process, under which the System stood ready at all times to buy certain specified assets.

In general, the record of the Reserve System in providing flexibility and preventing panics has been excellent. Its only conspicuous failure occurred during the Great Depression, and then it failed predominantly for technical reasons. What happened was that, in the face of a large outflow of gold and a sharp increase in the public's desire for currency, the Reserve System felt itself unable to undertake large offsetting open-market purchases. For at that time the System was required to hold as reserve against federal reserve notes not only gold to the amount of 40 percent but also "rediscounts" (the assets acquired through rediscounting) to the amount of the remaining 60 percent. As a result the System feared that, if government bonds had been purchased on a large scale in the open market, its holdings of rediscounts would have been reduced to the point at which there would have been inadequate backing for federal reserve notes. The upshot was that, while from 1929 to 1932 currency in circulation *increased* from roughly $4 billion to $5 billion, demand deposits *decreased* from $23 billion to $16 billion, causing total money to decline from $27 billion to $21 billion.

There are several lessons to be learned from this incident. First, it is obvious that gold movements and changes in the ratio of currency to demand deposits can attain magnitudes which have grave repercussions on the quantity of money. Second, the sharp decline in the quantity of money appears to have intensified the overall decline in income. In fact, almost 40 percent of the total decline during the Great Depression occurred after September, 1931, when England's departure from the gold standard increased the gold outflow and the contraction of the money supply in the United States. In sharp contrast, the decline in income in

Great Britain after September, 1931—when the departure from the gold standard eliminated the need for further contraction in the money supply—was less than 10 percent. Finally, the importance of providing the Reserve System with sufficient powers to deal with situations of this sort seems obvious. Probably this has already been accomplished: not only has the need to "back" reserve notes with rediscounts been eliminated (and the gold requirement reduced from 40 to 25 percent); since 1936 the Reserve System has had the power to change reserve requirements. In addition, the independent development of the Federal Deposit Insurance Corporation, which now insures the first $10,000 of deposits in almost all banks, has drastically reduced the likelihood of future bank panics. For all these reasons it seems quite unlikely that monetary difficulties will ever again have repercussions on the economy comparable to those in 1931 and after.

### Individual Banks and the Banking System

Much of the discussion thus far will make a man running a small independent bank think of Alice in Wonderland. In Situation 1, for example, the bank had $50 of deposits, a reserve requirement of 20 percent, and $50 of reserves. Its excess reserves, therefore, were $40. Yet with them the bank was able to expand its deposits fivefold—or by $200! *No individual bank in a banking system can do any such thing.* For, when we are considering the only bank in an entire country or all the banks of a country acting as a banking system, it follows that the bank or the system can lose reserves only as the public demands more currency or as gold flows abroad (disregarding possible actions by the Reserve System or its equivalent). *But an individual bank can also lose reserves to other banks.*

### The Possible Expansion of an Individual Bank

To illustrate what is involved, let us start with Situation 10 and, in effect reverting to Situation 2, examine what would happen if the public were to decide to *reduce* its holdings of currency from $60 to $50. For the system as a whole, as should by now be clear, the result will be an increase in demand deposits from $200 to $250 and in total money from $260 to $300. To demonstrate that the situation looks quite different from the point of view of an individual bank, let us assume that the system is composed of five banks. Before the $10 reduction in currency in circulation, each bank in the system would have looked like the banks on the right-hand side of Situation 11; but if all the currency is initially deposited entirely in one bank, its situation will be that illustrated to

Situation 11

| Bank Receiving Currency |  | Each of Four Banks |  |
|---|---|---|---|
| Assets | Liabilities | Assets | Liabilities |
| 18 Paper currency | 50 Demand deposits | 8 Paper currency | 40 Demand deposits |
| 32 Earning assets |  | 32 Earning assets |  |

Reserve requirement: 20 percent.
50 Paper currency + 210 Demand deposits = 260 Total money.

the left. If the bank receiving the currency were alone, it would be able to increase its earning assets and deposits by $40. What it will actually be able to do depends on the way in which the *general public wishes to distribute its holdings of deposits among the five banks.*

Suppose, to take one possible case, the public decides to distribute its holdings of deposits *equally* among the five banks. Suppose also that the bank receiving currency attempts to lend $40 of newly created demand deposits, resulting in Situation 12. But the receiving bank now

Situation 12

| Assets | Liabilities |
|---|---|
| 18 Paper currency<br>72 Earning assets | 90 Demand deposits |

has over twice as many deposits as the other four banks. If, as a result, people withdraw $8 in cash from the receiving bank and deposit $2 in each of the other four banks and if there is thereafter no further change in currency among the banks, each bank will find itself in Situation 13.

Situation 13

| Assets | Liabilities |
|---|---|
| 10 Paper currency<br>40 Earning assets | 50 Demand deposits |

Moreover, if we multiply the situation of each individual bank by five, we find that total currency in the banks is $50 and total deposits are $250, so that the system as a whole has indeed reverted to Situation 2.

Note that the receiving bank, instead of being able to use the $8 of excess reserves it had in Situation 11 to increase its deposits and its earning assets by $40, has been able to expand deposits not at all and earning assets *only by the amount of its excess reserves.* So limited an expansion is perhaps unlikely in the real world; it results from our assumption that people wished deposits among the banks to remain exactly equal. In practice, an individual bank gaining reserves is also likely to gain deposits, so that a bank is likely to be able to lend a little more than the total of its excess reserves, the exact amount depending on a variety of complicated factors. This means that, where the individual bank is small in relation to the system as a whole—as has been true in the United States—then the individual banker will be quite reluctant to lend at any time *much more than the amount of his excess reserves.* If he lends more, losses of reserves to other banks will leave him with less reserves than he is legally required to have, forcing him back to a position in which his net increase in loans is in close relation to the excess reserves with which he started.

In our example the *mechanism* by which the overexpanded individual bank was restrained was the withdrawal of currency for deposit in the other four banks. Actually at the present time, when reserves are mainly held as deposits in the federal reserve banks, what happens is that more checks will be drawn on the overexpanded bank than it receives. When these are offset against one another—"cleared" in technical terminology—the bank with more checks drawn against it will have to settle by transferring some of its reserve balances to the other banks, so that no currency need be involved. A banking system is, in short, rather like a bunch of gas-filled balloons, all of which are tied together: no balloon can get away from the rest because they are tied together, but if all are let go, they can rise rapidly. In the same way, every individual banker is tied closely to all other banks by potential loss of reserves to other banks if he moves faster than the banking system. What we have been concentrating on is where the entire bunch of balloons—in other words, the banking system as a whole—can go. It is hardly surprising, therefore, if an individual banker, who is simply one balloon in the bunch, finds the ground that we have covered quite unfamiliar!

What justifies our emphasis is that we have sought to provide an understanding of the broad impact of the nation's monetary and banking arrangements upon the economy as a whole. Given this purpose, the emphasis on overall behavior of our monetary system makes sense. But the reader should keep in mind that, to achieve broad understanding within the space which seemed appropriate for the subject, a great many aspects of money and banking—especially those concerning individual banks—have been omitted or simplified.

# 46 The Use of Money

## The Flow of Spending and the Velocity of Money

The last two chapters discussed in detail the factors responsible for determining the quantity of money. But we are primarily interested in the *flow of spending,* and that flow depends not only on the quantity of money but also on the *speed with which it is used.* Imagine, for example, an economy with 100 people, each of whom has a dollar. If at the end of the year each person spends his dollar for things he wants (and receives another dollar in return for the things he has to sell), then the flow of spending will be $100 a year; but if, instead, each dollar is spent at the end of each month, then the same number of dollars will have caused a $1,200 flow of spending. In short, the speed with which money is used or spent can influence the flow of spending quite as much as a change in the actual quantity of money.

The speed with which money is used is called the "velocity" of money. It refers to the number of times money is spent in a specified time period—usually a year. In the first of the two examples just given, velocity was 1 per year; in the second it was 12 per year. In what follows there will be considerable discussion of velocity; it is a convenient concept to have. There is a danger, however, that use of the concept will obscure the fact that velocity is not an independent characteristic of money but merely *summarizes the actions of those who hold money.* To illustrate, suppose we consider what is involved in increasing velocity from 1 to 12. No one (except perhaps a professor of monetary economics) gets up in the morning determined to increase the velocity of the money he holds. In the first case, when velocity is 1, the flow of spending and the quantity of money are both $100, so that money holdings are equal to spending; in the second case, when velocity is 12, spending is $1,200 and the money supply still only $100, so that money holdings are only $\frac{1}{12}$ of spending. What people *do* get up in the morning determined to do is to draw down or add to their money balances; and the resulting sharp difference in the relationship between money holdings and the flow of spending is the way in which they influence the velocity of money, even though they may never have heard of the concept.

Actually, as a little thought will show, velocity is nothing more than the reciprocal of the ratio of money holdings to the flow of spending. In other words, when the ratio is $\frac{1}{12}$, velocity is 12. Again, if average money holdings are equal to the flow of spending, giving a ratio of 1 to 1, then velocity is 1. The fact that the ratio of money holdings to spending is basic has given rise to what is called the cash (or money) balance approach. But the use of the ratio rather than velocity makes the presentation somewhat more cumbersome, so that velocity will be used in the discussion which follows; this will do no harm so long as it is kept firmly in mind that velocity is merely one way of presenting changes in the ratio of money holdings to the flow of spending.

### The Reasons for Holding Money

Why do people hold money? We have seen that money in itself is not useful. Why, then, do not people use it to buy the things they want or invest it in earning assets, so that they will be able to buy even more in the future? Three reasons for holding money are usually distinguished: the transaction motive, the precautionary motive, and the speculative motive. Of these the *transaction motive* involves the routine bridging of the gap between receipt of funds and the making of payments. Thus, if I am paid only once a month but have to pay $1 for my lunch every day, then I will have to set aside $30 of my month's pay for lunches and will have an average holding for this purpose of $15. The amount of money needed to bridge gaps between receipts and expenditures depends partly on the frequency of receipts and payments: if a man were paid every day and settled all his bills every day, he would need only small balances for transaction purposes. But it also depends on the overlapping of payment schedules: if all receipts were paid to a man December 31 and he paid all his bills January 1, his average holding of money would be only $\frac{1}{365}$ of his receipts; but if he were paid January 1 and did not pay until December 31, his average holding would equal his receipts. In other words, the amount of money that has to be held to facilitate current transactions depends on *payment practices.*

The second reason for holding money involves the *precautionary motive.* As a precaution against the unexpected, people usually have on hand a little more money than they actually intend to spend. Thus the price of my lunches may be suddenly raised or I may want to take a friend along. Hence I am unlikely to operate with transaction balances of exactly $15 even if I anticipate spending no more than an average of $1 a day. Transaction and precautionary balances can be lumped together as *current balances,* as they are held in connection with current receipts and expenditures.

A third and quite different reason for holding money is the *speculative motive,* in response to which people hold money because they consider it superior to other assets. Clearly if all prices are falling, as they do during a severe depression, money becomes more valuable and so is more desirable than any other asset. But there are other times when money may be a superior asset, as we saw in connection with the discussion of why banks sometimes hold excess reserves. A recovery in the economy, for example, is likely to be accompanied by a rise in interest rates and, therefore, a decline in the price of high-grade bonds. During a period in which recovery is taking place, money may well be a superior asset to high-grade bonds despite the interest the bonds yield—though not necessarily to all other assets, some of which (such as common stock) may be rising in price at a time when bonds are declining. Note that in all these cases money is being held as an alternative to other assets; in other words, it is being held on *capital* account, so that the balances involved may be called *capital balances* to distinguish them from the current balances already discussed.

### The Quantity Equation

The quantity equation has a long history in economics, but its modern development owes much to the American economist Irving Fisher, writing early in this century. It is important to distinguish between the quantity theory, which argued that changes in the quantity of money are responsible for changes in the level of prices, and the quantity equation. The former is controversial; the latter, *if properly defined,* is a truism. The equation as Fisher wrote it was

$$MV = PT$$

To define it "properly," let $M$ be equal to the quantity of money as defined in Chapter 44.[1] Then $V$ becomes the number of times $M$ is used

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[1] The definition of money presented in Chapter 44 is not essential; *any* definition of money may be used, provided that all the other terms are adjusted accordingly.

(per time period) to buy $T$; $P$ the price of $T$ when sold for $M$; and $T$ the quantity of things sold for $M$. On this basis, the equation is a *tautology,* which simply means that it is inevitably true because the definitions have been set up in such a way as to make it true. The definitions are, in short, circular; hence there can be no argument regarding the validity of the equation, only regarding its usefulness.

Note, moreover, the fact that $M$ comes before $P$ in the equation does not mean that changes in $M$ "cause" changes in $P$; the equation would be just as valid if it had been written

$$PT = MV$$

In fact, all the equation says is that the flow of spending is equal to the flow of spending and that the flow can be broken down in two ways: into the quantity of money multiplied by the number of times that money is spent and into the quantity of things sold for money multiplied by their price. Let us examine the terms of the equation in somewhat greater detail, and then consider why the equation still appears useful, though rather out of fashion at the present time.

### Transactions versus Current Output

Actually the definition of the terms that Fisher used has not turned out to be particularly helpful. For he included in $T$ everything sold for money. On this basis the equation for 1929 works out as follows (in billions):

$$M \times V = PT$$

$$27 \times 40 = 1{,}080$$

On the other hand, suppose we include in $T$ only "currently produced, finished goods and services," which, when multiplied by the prices at which they are sold, gives the value of current production (and hence of the national income).[2] Then for 1929 we get a quite different equation (again in billions):

$$M \times V \quad = PT$$

$$27 \times 3.25 = 88$$

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[2] This definition is approximate, disregarding such refinements as changes in inventories of unfinished goods, capital consumption allowances, and indirect business taxes. The actual computation presented is based on the Department of Commerce's estimate of the national income.

How is such a vast difference possible? The answer follows directly from the second definition of $T$. For much of the total flow of spending goes to purchase "unfinished" goods—wheat, flour, bread at wholesale rather than "finished" bread at retail; or "previously produced" goods—such as secondhand houses or cars or stocks and bonds.

There is also a technical problem, which we may note briefly. Our information regarding total spending on $T$ in Fisher's sense comes from total "bank debits," which are derived by the simple process of adding up the value of all the checks drawn against demand deposits during a given period. But checks are often drawn, not to pay for the purchase of anything, but to move money between bank accounts, as when a wife receives an allowance from her husband and deposits it in a separate account. In one sense these are not "transactions" at all; alternatively they may be called "money-to-money" transactions. The point is that we do not exactly know how much is involved. Hence the flow of spending on everything, including as it must "money-to-money" transactions, is of considerably less interest than when we confine our attention to the flow of spending on the currently produced, finished goods and services that are included in the national income. To mark the difference, let us write the "income" equation as

$$Mv = pO$$

where the meaning of $M$ is unchanged, $O$ is currently produced, finished output, $v$ the number of times $M$ is used to buy $O$, and $p$ the price of $O$ when sold for $M$.

## The Significance of the Quantity Equation

Being neither more nor less than a truism, the equation by itself tells us nothing. Its usefulness has to be judged by the extent to which it clarifies aspects of the economy that would otherwise be obscure. We are throughout interested in changes in the flow of spending. One thing the equation makes clear is what must be involved if the flow of spending declines: either $M$ or $v$ (or some combination of the two) must decrease. A break in the flow of spending because $M$ is decreasing is relatively easy to comprehend: if a shortage of reserves forces banks to destroy money in the manner discussed in Chapter 45, it is understandable that spending will decline. But it is equally true that, without any change whatsoever in the quantity of $M$, spending will decline if $v$ declines. Moreover, $v$ will decline not only if a man buries currency in a pot in his backyard but also if he buries his checkbook in the pot! For "hoarding"—failing to spend money—results just as much from the failure to transfer demand deposits by drawing checks against them as it does from not passing currency across the counter. The quantity equation, therefore, helps us understand the *mechanics* of changes in the flow of spending. But this does not necessarily help us to understand why it is that $M$ is contracting or $v$ declining.

Does the equation do more than this? Does it throw light on any of the factors that *directly* influence the flow of spending? We may conclude this presentation of the equation with a single example of the sort of analysis that it makes possible. From the end of the Civil War until the turn of the century, the broad movement of prices was downward. We can sum up what was happening in the following way:

$$\overset{\uparrow}{M}v = \overset{\downarrow}{p}\overset{\big\uparrow}{O}$$

For during the period, which was before the establishment of the Federal Reserve System, the quantity of money depended largely on the supply of monetary gold, which was increasing less (small upward arrow) than the expansion of output (large upward arrow) resulting from the rapid industrialization that was taking place. Under the circumstances, *if* v *were constant,* $p$ would have to fall (small downward arrow). The decline in prices that actually took place during the period led to continual political agitation for an expansion of the money supply. Certainly the most spectacular incident in the agitation was Bryan's winning of his second Democratic nomination for the Presidency by means of a speech which ended with the words: "You shall not press down upon the brow of labor this crown of thorn. You shall not crucify mankind upon a cross of gold!"

What the equation makes clear, which would otherwise not have been obvious, is that Bryan's impassioned oratory would not have been necessary if payment practices had not set *a maximum level beyond which velocity could not rise.* For, if velocity had been capable of increasing sufficiently, the flow of spending might have increased enough to eliminate the decrease in prices that so concerned Bryan. Note that payment practices *can* change; during the runaway German inflation after World War I there was a great increase in velocity (so that the flow of spending increased *much faster* than the vast increase in the supply of money pouring from the printing presses). But the great increase in velocity occurred because people came to be paid *twice daily,* and were allowed time during their lunch hour to spend their pay before its purchasing power deteriorated further! At least in more normal periods, the payment practices which set an upper limit to velocity can be sufficiently unyielding to force prices downward—and to create sufficient political problems to bring forth Bryans. Nor is this point merely of historical interest. As the equation makes clear, control over the flow of spending can be achieved by control over the quantity of money *only if there is some level beyond which velocity cannot increase.* But we shall see that there are times when velocity may be nowhere near its maximum level. During such periods, to an extent made particularly clear by the quantity equation, monetary controls may have little or no effect on the flow of spending. Hence we shall find that the equation is of aid in understanding certain aspects of the behavior of the economy.

# 47 Why Spending Fluctuates

## Introduction

Thus far we have discussed the main factors that determine the quantity of money and the use of money. Although we shall find that sometimes monetary factors have a *direct* impact on the flow of spending —as between 1865 and 1900, when the flow of spending was restricted by limitations on *M* and *V*—in general all we have demonstrated is that variations in the flow must involve either variations in the quantity of money or the speed with which it is used (or, of course, some appropriate combination of the two).

This chapter will do two things: first, it will make clear that, although fluctuations in the flow of spending are not inevitable, they are quite likely in a free enterprise type of economy; second, it will discuss some of the areas of the economy which are particularly likely to be responsible for fluctuations.

## The Circular Flow of Spending

Well over a century ago J. B. Say, a French economist, proposed what came to be known as Say's Law—that the production or "supply" of goods created the demand with which the goods could be purchased. We shall see that in a certain sense Say was right. But if he was right, how can there be fluctuations in the flow of spending, which from time to time leave goods unsold?

The essence of the matter can be stated in two propositions. First, in any period the income accruing to the factors of production employed during the period is equal to the value of the goods and services produced in the period. Second, there is no reason why either income or the value of production should be the same in the following period. The first proposition is not new: we considered it in Chapter 2, where we saw that the equality between total income and the value of production grows out of the fact that profits of entrepreneurs are the difference between the *value of production* and the *income of all factors of production except entrepreneurs.* When the profits of entrepreneurs are added to the income of all other factors, we get an *income total which must be equal to the value of production in the period.* This is the sense in which Say was right. Another way of making the point is to remind the reader that the value of production is equal to all costs of production including the "cost" of obtaining the services of entrepreneurs.

But there is no reason why the flow of spending should continue unchanged. Typically money flows in a circular path in an economy. Let us break into the circle at the point at which money is received as income. Most of it is spent for *consumption.* Part of such spending will be received as income by those providing retailing services (either as employees or as entrepreneurs); the rest will continue through the productive process to be received as income by those engaged in wholesaling, manufacturing, mining, or other economic activity. Again part of income will be paid as *taxes;* after receipt by the government it will become income again either directly as a result of payments by government to those it employs or indirectly through purchase by government of goods and services from private industry, which will generate income in the manner just described for consumption.

Finally, if we confine ourselves to major alternatives, the portion of income that is *saved* will become income again when it is used to buy newly produced additions to the plant and equipment of the economy. Sometimes this process is quite simple, as when an independent grocer buys a new deep-freeze for his store rather than for his wife; but it can be quite complicated, for passage through the capital market is usually involved. A teacher's monthly pension contribution, for example, may first be used to buy an existing bond and this process may be repeated several times. But usually the seller of an existing security will sooner or later purchase a newly issued security, and the company which has just issued the security will then be able to purchase investment goods, which once again will generate income in the manner described for consumption.

### Variations in the Circular Flow

Thus it is perfectly possible for the circular flow of money—from income recipients back through the production process until it becomes income again—to continue unchanged. But there is no certainty that changes will not occur. *At any point in the process* the circular flow may expand or contract as a result of either an expansion or contraction in the quantity of money or an expansion or contraction in velocity. Obviously anyone with money balances is in a position to alter velocity by simply altering the ratio of his balances to his spending. Those who are in a position to borrow from, or repay loans to, banks are in a position to increase, or decrease, the quantity of money, which may in turn cause a change in the flow of spending. In the past such changes were thought to be brought about only by business or government, as consumers typically did not borrow from banks; but the rapid expansion of installment debt in recent years has substantially eliminated this distinction.

In short, anyone in an economy may *conceivably* cause a variation in the circular flow by spending more or less than he receives. But, while *conceivable,* spending more or less than receipts is not equally likely in all areas of the economy. Hence our task, in trying to find what it is that "causes" variations in the circular flow, is to look for the "strategic areas" where additions or subtractions are particularly likely to occur.

### Causation and Fluctuations

What is meant by "causing" a variation in the circular flow? The answer is less obvious than may first appear. Consider an economy with a starting income of $100 and no saving or investment; suppose in a subsequent period spending on automobiles declines by $10, so that, in the absence of investment, income falls to $90. What has happened? Has the decline in income been "caused" by the decline in spending on consumption or has it been "caused" by the failure of $10 of investment to occur? The matter has both *substantive* and *terminological* aspects. In many cases the substantive answer depends upon consumer or business motivation about which we have little direct information. If the reason for the $10 decline in spending on cars is that consumers are disenchanted with this year's models and are hoarding their income until next year's models become available, it would seem correct to describe the decline in income as "caused" by a decline in spending on consumption. But if the decline was the result of a permanent decision on the part of consumers to save more in order to make more adequate provision for their old age, then the failure of investment to occur might appropriately be said to have "caused" the decline in income. In what follows we shall, in the absence of information regarding more complicated motivation, tend to say that a decline in spending on a particular item "caused" a decline in income. The possibility that the full explanation is more complex should always be borne in mind.

It is of great importance that causation should not be obscured by the terminology used. In terms of our example, there is nothing *formally* wrong with an approach which measures saving by the difference between the $100 income in the initial period and the $90 spent on consumption in the subsequent period and makes the failure of investment to equal this $10 of saving the *formal* explanation of the decline in income. The danger is that an approach such as this will mislead both as to what in reality has happened and as to what is needed—suggesting, for example, that encouragement of investment is called for when what is really needed is the improvement of the consumption goods that are available.

## The Concept of Strategic Areas

In general, "strategic areas," where changes in the flow of spending are particularly likely to occur, are areas where spending can be *postponed* with, for the businessman, small loss of profits and, for the consumer, small loss of satisfactions. Thus if a businessman does not replace a machine within the month, profits are not likely to be much affected, though the cost of repairing the machine may be relatively high. But if he does not meet his payroll for a month, profits are likely to be seriously affected because production is likely to stop. Again if a consumer does not replace his car for a month, his loss of satisfaction is not likely to be great (especially if his neighbor has not replaced his). But if he stops buying gasoline for a month, the need to take up walking is likely to make his loss of satisfaction considerably greater!

Five main strategic areas may be distinguished: residential housing, consumer durables, producer durables, business construction, and inventories. Undoubtedly a more detailed breakdown would be desirable, but we can learn much from the behavior of these areas. What we shall want to do is to examine why fluctuations in spending appear particularly likely in each of the areas chosen. Then in the chapter which follows we shall see to what extent the interaction of these areas offers an explanation of the overall behavior of the economy.

### Fluctuations versus Cycles

Should we describe the behavior of the economy as involving fluctuations or "cycles"? If we mean by a "cycle" nothing more than alternating periods of "good" and "bad" times, we clearly have cycles; we have records of variations in the economy going back for several centuries. But the greater the regularity implied by a "cycle"—and the longer the period involved—the smaller the number of cases open to us. There has, for example, been some discussion by economists of "long cycles" with a length of fifty years or so; but the fewness of the examples has left the discussion quite inconclusive. On the other hand, there seems to be sufficient evidence to permit us to talk with reasonable certainty of an "inventory" cycle with an average duration of perhaps three years. Note carefully that an average of the sort we are discussing can conceal wide variations; were it not for such variations, the life of business forecasters and stock market speculators would be far simpler.

There is also evidence of a sixteen-year housing "cycle" and perhaps an intermediate durable goods "cycle," but the case for the existence of such "cycles" is by no means conclusive. As for housing, it is hard to decide whether the sixteen-year fluctuations that appear to have prevailed since the Civil War reflect the character of the industry or the timing of our wars! We shall shortly consider why it is that housing fluctuations are of such long duration. But the Spanish-American War followed the Civil War by thirty-three years—or two "cycles"—and World War I started sixteen years later. During this period of relative peace the intensity of the housing "cycle" steadily diminished. Starting with the end of World War I, however, we once more experienced a severe fifteen-year "cycle," recovery from which was interrupted by World War II. Under the circumstances, how well established should we consider a sixteen-year housing "cycle" to be? Again we shall place considerable emphasis on the possibility that the demand for "durable" goods may become considerably less urgent after a long period of prosperity. But in this century, since "durables" obtained their present importance, we shall see that only 1929 offers a good example of this sort of situation, so that a durable goods "cycle" has certainly not yet been established.

Actually the exact terminology used is not of major importance. What is vital is to keep in mind the tentative character of all these generalizations, especially where the period involved is long or the area of the economy under consideration has been undergoing change. To stress the tentative character of the discussion we shall in general refer to "fluctuations"; the use of "cycle" is equally appropriate if the necessary qualifications are kept in mind.

### Residential Housing

At any time there is a close correlation between the number of families and the number of dwelling units. Hence even at the end of a major war the "backlog" in housing demand—in the sense of couples sharing dwelling units that they would prefer to have for themselves, living with their families, or perhaps even waiting to get married—is small in relation to the total stock. To illustrate, imagine an economy with 50 million dwelling units and a 2 percent annual increase in families. Suppose, further, that it had emerged from a major war with a backlog amounting to 5 percent of existing units. Then it would take the housing industry five years, producing at the rate of 1.5 million units a year, to provide for the increase in population and at the same time eliminate the backlog. But production is not likely to be at a uniform 1.5 million units from the start. During war or depression, builders ultimately drift off to other occupations and are slow to return, so that production may well start at a low level. If it were to begin at 0.8 million units and increase each year by 0.2 million units until the peak rate of 1.5 units is reached in the fifth year, the initial 5 percent backlog would not be wiped out until after the eighth year.

An almost unique characteristic of the housing industry is that very little housing is privately "replaced." Houses may be replaced by apartment houses or be torn down to make way for nonresidential use of the land; they may be greatly improved by rebuilding; and in recent years slums have been replaced by new residential housing with public financial help. But only a tiny percentage of privately financed new housing goes to replace existing housing which has been "junked"—in sharp contrast to the automobile industry, where replacement demand is currently the most important factor in sales. It is the absence of replacement demand that makes housing activity so sensitive to variations in the backlog of housing demand.

But the elimination of a backlog is not necessarily immediately recognized. On the supply side, the same factors that slowed the initial expansion delay the reaction; once in the industry, contractors do not at once move elsewhere. For a time, builders may continue to build even though the "vacancy rate" is increasing. But soon, in an effort to eliminate vacancies, the price of existing houses is likely to decline, making it increasingly difficult to sell new houses at a profit. Particularly if the backlog is worked off at a time of general prosperity, considerable over-building may occur before a reaction takes place. If production declines slowly so that it remains for some time above the rate of increase in families, then the ultimate correction is likely to be both severe and prolonged.

What this analysis is capable of explaining should not be exaggerated. It has not considered changes in the rate of family formation; we shall see that the rise in the birth rate that started in 1940 may have changed the immediate prospects for the housing industry. Further, it premises rather than explains the initial backlog of demand; it is quite possible that, let alone, fluctuations in housing might tend to decline in intensity—as they appear to have done between the Civil War and World War I. On the other hand, if a housing decline were to coincide with a severe general depression, the doubling up and postponement of marriage caused by such a depression might well explain the initial backlog without reliance on a factor "outside" the economy system, such as the impact of war. In short, although certainly not providing a full explanation of a regular and self-perpetuating housing "cycle," the suggestions made appear helpful in explaining why fluctuations in housing are likely to have a "life of their own" of different duration from fluctuations in general business activity.

## Durable Goods

Thus far we have made reference to "backlogs" without defining the term in any detail. In the case of housing, both because of the smallness of replacement demand and the fewness of families with more than one dwelling unit, a reasonably adequate definition is possible in terms of the relationship between families and dwelling units. But in the case of durable goods a similar definition does not make sense, partly because people are more likely to own several units of the same type of durable goods, but mainly because changes in quality as well as in quantity must be considered. Specifically, using automobiles as an example and taking average car age as a measure of quality, we must include in the elimination of a backlog, not merely achieving some ratio of cars to licensed drivers but also reducing the average age of the car population. But this makes the entire concept rather fuzzy, as we *can* go on reducing car age more or less indefinitely. Hence it is quite hard to define "backlogs" meaningfully in connection with durable goods.[1]

[1] The contrast with housing should not be exaggerated. Housing quality can be improved by expenditures on "home improvements." But there are two differences: such spending does not create a demand for new housing units and (perhaps for this very reason) tends to be relatively less important than replacement demand for durables.

But there is considerable evidence of wide variations in the *intensity* or *urgency* of the demand for durable goods. In both 1929 and 1946 stock prices fell drastically. The first decline marked the start of the Great Depression; the second had almost no repercussions on overall economic activity. Why were the results so different? Certainly a factor of vital importance was the greater urgency of demand in 1946 for most goods, especially durables. In that year many people who wanted them either did not have cars or had cars which were badly in need of repair; in fact, people in 1946 were so anxious to buy cars that they paid more for secondhand cars than the original list price! Under such circumstances they were unlikely to be deterred from buying by even a quite drastic decline in stock prices.

### The Concept of Vulnerability

By 1929, in sharp contrast, the United States had had a decade of almost continuous prosperity. Never before had so many Americans had so many material possessions. Under those circumstances the urgency of demand for the latest model had diminished; in this sense the economy can be said to have become "vulnerable" to possible fluctuations in spending. Note the highly relative character of this concept: by present standards Americans in 1929 drove primitive cars and lacked almost all the "gadgets of civilized living"—such as automatic clothes washers and driers, dish washers, deep-freezers, television sets, even reliable refrigerators. Today the demands of a young couple equipping their home would never stop at the 1929 level; they would urgently need many additional things. Nor is it a question of "running out of things to buy"; even in 1929 there were large numbers of Americans who bought more things than the average American buys today. Rather, the point is that in 1929 people did not feel any urgent need for the goods that were then available.

Much the same sort of thing seems to have taken place since 1946, particularly in connection with consumer durables. In the recession of 1949 spending on durables *increased* by 6.9 percent over the previous year; but in 1954 it *decreased* by 2.1 percent and in 1958 by 7.5 percent. Again between 1955 and 1958 the number of automobiles sold declined by 46 percent. It seems clear that in each succeeding recession consumers found it easier to postpone their expenditures, which is, of course, simply another way of saying that over the period the economy was becoming increasingly vulnerable.

If people are less interested in goods, must this not mean that they want to save more? Not necessarily. It is perfectly possible for people to intend and expect to consume the same percentage of their income and still not want consumption goods particularly urgently. This is not to deny the possibility that saving may increase toward the end of a long period of prosperity (though there is little evidence that it does in fact increase); but the decline in urgency which renders an economy vulnerable can be quite independent of any change in the desire to save.

### Consumption and Breaks in the Circular Flow

The emphasis on urgency and vulnerability is unusual. Equally unusual is the emphasis on consumption, and especially consumer durables, as a "strategic area" capable of causing a break in the circular flow of spending. For consumption is typically treated as if it depended almost entirely on the level of income, which in turn is taken as depending on the level of investment. The fact that investment is quite variable and the relationship between consumption and income quite stable is often offered as evidence in support of this approach. But consumption is roughly two thirds and gross investment less than one sixth of the gross national product. Hence it is inevitable that consumption and the gross national product should in fact move together and the relationship between them be *relatively* stable. This stability, however, should not be allowed to obscure the fact that changes in consumption, because of the sheer quantitative importance of consumption, frequently play a significant role in explaining changes in the level of income.

Even more important is the fact that consumption and investment are broad categories; in many cases the components behave quite differently from the totals. We have already noted the increasing variability of spending on consumer durables since World War II and the decline by 46 percent in the number of cars sold from 1955 to 1958—over a period when consumption as a whole increased by 7 percent. In the other direction, though gross private investment fluctuated rather violently in the postwar period, construction, which made up about half of total private investment, was *more stable* than consumer durables. Moreover, consumption excluding durables was considerably more stable than consumption as a whole, a fact that casts doubt on the notion that, if consumers do not spend on durables, they will inevitably spend on something else. In short, though the resulting complexities are obviously a nuisance, it does not appear to be possible to explain fluctuations entirely in terms of simple relationships between investment and consumption; a full explanation requires that "strategic areas" within both categories receive separate attention.

### Producer Durables

Thus far the analysis has been stated mainly in terms of decisions regarding consumer durables, for such decisions are likely to be readily understandable. But it is not clear that the situation in regard to producer durables is basically different. It is, of course, different in form: producer durables are bought to increase the profits of the firm buying them. For this reason economists are sometimes given to stating the basis for the decision to buy entirely in terms of quite precise profit calculations. But estimates of future profitability are actually difficult to make; in practice businessmen often use rather crude rules of thumb—such as that a machine is worth buying if it can be expected to recover its cost in three years. It is this uncertainty in regard to future benefit that makes the decision to buy producer durables not so greatly different from the decision to buy consumer durables.

To illustrate the point, compare the reaction of consumers and producers to new products—for example, television and jet aircraft. Once perfected, television was something the average consumer *had to have*. Perhaps he borrowed or reduced his saving to obtain a set, but in any event nothing was likely to interfere with his consumption spending until he had made his purchase. But the same was true of the aircraft industry. In its case the cost was so great that borrowing could not be avoided, but nothing was allowed to interfere with the investment program of the industry until it had equipped itself with jets. And this is true despite the fact that the purchase of jets appears to have decreased (at least temporarily) the overall profitability of the industry!

Several points regarding the statistical behavior of producer durables are worth noting. Apart from inventories, no component fluctuated as violently in the three postwar recessions, with declines ranging from 7.5 to 21 percent. Because of the strength of the investment boom in the middle fifties, the smallest decline occurred in 1954, while the largest was in 1958. Moreover, in contrast to consumer durables, which, while reacting more during recessions, *increased* from 8.9 percent of the gross national product in 1949–1953 to 9.4 percent in 1954–1959, producer durables *declined* from 6.4 percent of the gross national product in the first period to 5.6 percent in the second. Clearly the behavior of producer durables is of considerable importance in explaining not only postwar fluctuations but also the recent slowing down in the growth of production.

### Business Construction

What has been the role of business construction—including such varied things as steam turbines, stores, factory buildings, railroad stations, and the like? In the postwar years business construction has been somewhat *smaller* and *more stable* than residential housing—and a good deal *more stable* than consumer durables. In part the stability of business construction reflects the importance in the total of utilities, which have been growing at a relatively steady rate in the postwar period. But it also reflects the fact that, during relatively minor recessions such as those since World War II, recovery occurs before major reductions in construction are possible; the behavior of construction during the Great Depression was quite different. In short, business construction expenditure tends to lag behind other types of business investment and to vary less (at least in small recessions), but otherwise does not appear to differ in any important way from other types of business investment spending.

### Inventories

Inventories represent the last of the "strategic areas." Note that a $1 billion increase in inventories *absorbs* $1 billion of saving, whereas a $1 billion decrease *adds* $1 billion to the total supply of saving. As a result, a change from a $1 billion increase to a $1 billion decrease in inventories requires a *$2 billion increase* in other investment if investment as a whole is to remain unchanged. The fact that changes from accumulation to deaccumulation have a multiplied impact helps to explain the importance of inventories.

Inventories are widely spread through the economy and include unfinished as well as finished goods. The factors that determine the size of inventories are highly complex; indeed, in large businesses the decisions are so complicated that they are increasingly being turned over for solution to electronic computers. Increases in delivery time may make it desirable for inventories to increase more rapidly than sales in periods of prosperity (and vice versa during recessions). But even allowing for this possibility, the observed changes in inventories cannot be satisfactorily explained except in terms of efforts by businessmen to achieve "inventory profits" by expanding inventories when prices are low and reducing them when prices are high. In the future the increasing complexity of decisions regarding inventories and the increasing tendency to handle them mechanically may reduce inventory speculation, but thus far the temptation to try to achieve easy profits has apparently been irresistible.

To achieve inventory profits the size of inventories must vary more than in proportion to sales. For if prices of unfinished and finished goods rise by the same relative amount, even if the goods being finished today are made out of materials bought when prices were lower, no inventory profits will result, as the materials used up will have to be replaced at the current higher price level. Hence successful inventory speculation involves increasing inventories beyond minimum needs when prices are lowest and reducing them to no more than minimum needs when prices reach their peak. As a result, in theory at least, successful speculation would appear to be stabilizing, involving buying at the "bottom" and selling at the "top."

In practice, few businessmen seem to have the foresight to expand their inventories when prices are falling or have just stopped falling: the memory of recent inventory losses is too fresh. Instead, they tend to wait until a continuing rise in prices and expansion of income give clear evidence of recovery, thereby intensifying the expansion. But why does the expansion reverse and become a contraction? Obviously, as we approach full employment, the physical increase in production cannot continue. It appears that the slowing down in the rate of expansion—and therefore in the rate of price increase—leads businessmen to try to "cash in on" the profits they have realized. The timing involved, which we shall see is remarkably regular, seems to be partly a reflection of prevailing business psychology, but it is also related to the speed with which production can be increased. In any event, as soon as even a few businessmen decide the time has come to sell, weakness in the economy is likely to result. Sales by only a few can check the price rise, which induces more to attempt to sell, which in turn may bring price weakness and a general slowing down of the economy. Unless offset by other influences, the general weakness is likely to continue until inventories have been brought more into line with minimum requirements—which is the point at which we started, enabling the whole process to start over again and providing us with an explanation of a substantially self-perpetuating inventory "cycle."

### The Process of Contraction

Let us conclude this discussion of why spending fluctuates with a consideration of what typically happens during a severe decline in business activity. Once a contraction starts, the tendency for it to cumulate is generally recognized. A pencil manufacturer, even though he has the money in the bank ready to use, may decide not to go ahead with a planned extension of his factory until he sees if the contraction is going to have any effect on his sales. But when a builder does not get the job of building the extension, he buys less pencils, thereby bringing about the very thing that the pencil maker fears. Or a consumer may decide not to buy a new car because he is afraid that he may lose his job; but if he works for a company selling to General Motors, his failure to buy a car may once more help to bring about the very thing he fears.

Overall contraction occurs when *on balance* economic units—businessmen and income recipients throughout the economy—contribute less to current spending than they receive as current income.[2] We may call this "running a surplus"; and contributing more to current spending than is received as current income, "running a deficit." These two concepts are closely related to "saving" and "investment"; in fact, in normal times income recipients typically run surpluses which are offset by the deficits of business borrowing to expand their plant and equipment. Why, then, is a different set of terms necessary? One reason is that many of the current offsets to surpluses hardly fall under the heading of "investment." Take a man who has lost his job but has some accumulated assets. Disregarding unemployment benefits, he will run a deficit equal to all or almost all his spending, for he has little or no income; this will be just as much of an offset to surpluses (as long as his assets hold out) as any other deficit, but can hardly be described as involving "investment."

Even more important is the fact that accounting practices tend to obscure the *current* contribution of business units. Most business costs must be paid currently, but this is not true of depreciation allowances, which are deducted from current income but do not have to be reinvested immediately, or of business profits, which may or may not be put to immediate use. In fact, the borrowing of business exactly equals its current deficit only if depreciation allowances are currently used to purchase investment goods in addition to the net investment financed by borrowing, and also only if profits are either currently reinvested or used to pay dividends or taxes.

### Contributions to Contraction

Thus the unemployed man who is drawing on his assets to live is running a deficit and the man who does not spend all his income—perhaps out of fear of appearing "too prosperous"—is running a surplus. At the start of a depression surpluses are relatively easy to run. Incomes are high and purchases of goods relatively postponable. *The longer a*

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[2] This is an approximate definition. In any period, spending on current output must equal current income, and a divergence between the two is only possible if period analysis is introduced. But the present abbreviated definition greatly simplifies the exposition and hence appears justified when the emphasis is on the behavior of a single economic unit.

*depression continues, however, the harder it is to maintain a surplus.* This is partly true because, as income declines, types of spending have to be eliminated that involve an increasingly immediate loss of satisfaction. But, in addition, the availability of improved models (perhaps at lower prices) makes the replacement of worn equipment increasingly attractive. Overall it seems likely that income recipients as a whole run relatively large surpluses at the start of a depression, but the lower income falls and the longer the depression lasts, the more likely it is that surpluses will turn into deficits and in this way contribute to bringing the contraction to an end.

Note that, once again, the discussion implies considerable variability in the relationship between income and consumption. Even those who claim that the relationship is relatively rigid in normal times, however, can hardly argue that it is rigid in the middle of a depression. It must, moreover, change with time in a way quite hard to predict statistically. For, even if income did not change, time would cause some of the unemployed, who had previously run deficits by drawing on past assets, to use up their assets, and it would also cause some of those who had previously run surpluses to use their assets, or go into debt, to replace goods that had worn out.

Much the same is likely to be true of business, but the quantitative importance is likely to be far greater. For not only is business likely to reduce or eliminate its normal deficit as it reduces or eliminates normal net investment; it may also run a large surplus by not reinvesting its depreciation allowances, not replacing its inventories, and not utilizing its profits. As depreciation allowances are roughly equal to net investment at the present time, which in turn amounts to perhaps 8 percent of the national income, the decision to eliminate all replacement of capital—quite apart from changes in inventories or failure to use profits—would by itself involve a change from a deficit equal to perhaps 8 percent of the national income to a surplus of roughly the same amount, which, to be offset, would require a deficit from some other source equal to 16 percent of income. It is obvious that business is of greatest quantitative importance in contractions.

But, as with income recipients, as a depression worsens, business surpluses, even including postponed investment of depreciation allowances, tend to decline and in many cases become deficits. It is not easy for business to reduce its expenditures as rapidly as its sales; no business likes to risk the loss through layoff of skilled workers and other key personnel on whom the success of the business is felt to depend—especially if the decline is thought to be temporary. As a result, many businesses end up with deficits despite everything they can do. In 1932 only two locomotives were built in the United States—both for export; the revenue from their sale hardly covered the cost of watchmen for the industry's plants! Although this is obviously not typical, nonetheless the longer a depression continues and the deeper it goes, the harder it is for business to run a surplus.

### Government and Contractions

Because most governments do not engage in capital accounting, a reported government surplus or deficit tends to be a rough approximation of the current contribution of the unit involved. This is, however, not always the case. The trust funds established in connection with the social security program of the federal government, and also its lending operations, have tended to obscure its current contribution; we shall find that this was a factor in the recession of 1937. Conscious action by government to stabilize the economy will be considered in Chapter 50, when remedies are discussed. But, even apart from conscious programs, governments have typically had a stabilizing influence. Government expenditures tend to decline slowly during a depression, whereas government receipts decline as rapidly as income if the tax structure is proportional, and even more rapidly if the tax structure is progressive, so that governments have increasingly tended to run deficits "automatically" during recessions. But, in the absence of conscious policy to the contrary, efforts to hold down the deficits by raising taxes and reducing spending have in the past severely limited the quantitative importance of the government's "automatic" contribution to stability.

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# Recent Economic Fluctuations

### Introduction

Attempts to understand economic fluctuations have taken two forms. Efforts can be made to construct logically consistent explanations: this is the *deductive* approach and produces business cycle theories. Alternatively we may collect information regarding the actual behavior of the economy without subjecting it to much interpretation: this is the *inductive* approach, best exemplified in the United States by the work of the National Bureau of Economic Research. What follows represents a combination of both approaches: *the facts presented are both selected and interpreted.*

Keep in mind that there have been economic fluctuations—in the sense of alternating periods of "good" and "bad" times—for at least several centuries. But conditions in the past were in many ways different from those that prevail today. We shall start, therefore, with the Depression of 1920, which followed World War I.

### The Depression of 1920

There are two main differences between the impact on the economy of World Wars I and II. In World War I our military effort was relatively minor; despite the fact that we were in the war over a year and a half, automobile production was, for example, never eliminated, though it was significantly curtailed. Hence the backlogs that developed during the war were relatively limited in size. On the other hand, there was no price control during World War I. What price controls do is to "suppress" temporarily the effects of the monetary expansion that accompanies most wars; there was no such "suppression" during World War I.

In fact, so intent was the still-young Federal Reserve System on facilitating government borrowing to finance the war that it did not give its primary attention to the prevention of inflation until after the Victory Loan drive had been successfully completed early in 1919. At that time many European nations were in desperate need of supplies to make good war losses. This source of demand, plus the impact of monetary expansion, caused a rapid rise in prices and widespread inventory speculation. A rise in prices may induce two quite different reactions: it may induce people to rush in and buy before prices go higher or it may induce them to postpone their purchases in the hope of lower prices in the future. Actually *both* reactions are simultaneously possible and sensible: 1919 was a good time to buy food but a poor time to buy a house. Most people had some sort of accommodations and could afford to postpone buying a new house until prices fell in 1921, but they could not postpone eating despite the higher prices they had to pay for food in 1920.

As a result, although there was a real backlog of demand for houses, the housing industry had difficulty in getting people to buy in 1919 and 1920. As prices continued to rise, the reluctance to buy spread to durables, where postponement was also possible. An expectation that prices will fall logically involves an expectation that wages will also fall, as wages are by far the most important element in costs. In 1920 this was a quite possible expectation, as wages had fallen in the past, and many of the labor unions that had developed during the war did not survive into the postwar period. Finally, worried by the continuing rise in prices, the Reserve System started to restrict the money supply from the middle of 1919 onward. Thus the demand caused by European shortages and inventory speculation temporarily concealed increasingly unfavorable underlying conditions.

As European production recovered and American production expanded, increased supplies in the face of demand curtailed by monetary restriction slowed down the rise in prices. But the hope of inventory profits had caused many to build up inventories greatly in excess of their needs. The slowing down of the rise in prices started inventory liquidation, which caused prices to fall, which led to even more drastic inventory liquidation. This inventory liquidation, combined with the unfavorable situation in housing and durables, led to what was probably the most rapid decline in overall economic activity ever recorded up to that time.

The recovery was also rapid: as soon as costs and prices fell, demand picked up swiftly. In fact, more housing units were produced in 1921, the year in which business as a whole was most depressed, than in 1919 or 1920. Not only was there a strong underlying business demand for modernization of plant and equipment; this was the start of the era when Henry Ford's Model T put America on wheels. Thus even a drastic depression is likely to be short-lived if it occurs during a period of expanding demand for houses and when there is a widespread demand, both by business and consumers, for a great many types of durable goods.

### The Depression of 1929

The Depression of 1929 is to a significant extent unique. It was, moreover, completely unexpected—quite as unexpected as would be a decline of similar magnitude starting tomorrow. For 1907, the last prewar depression, was felt to have resulted from a banking panic whose cause had been eliminated by the establishment of the Reserve System, and 1921 was considered to have been caused by the war. True, many afterward claimed to have warned that stock prices would decline. This was not a particularly difficult prediction; for, as one wit put it, by the middle of 1929 stock prices were capitalizing not only the future but the hereafter! But not even the most pessimistic Cassandra anticipated that in four years income would decline by half, production by a third, and employment by a quarter.

In retrospect, what went wrong? The stock market broke severely, starting in October, so that during the last quarter of the year the economy was clearly faltering. Yet for the *year as a whole* almost every area of the economy was *at a higher level than ever before*. The 1929 sales of automobiles, for example, were not again equaled until 1949. The only major exception was housing, where units built reached a peak in 1925—seven years after the end of the war. But a boom in apartment houses kept the industry at a fairly high level through 1928; only in 1929, when units built were only 60 percent of those constructed in 1925, did housing become seriously unfavorable. And expansion of other types of investment was sufficient to make net investment as a percentage of national income higher in 1929 than in the immediately preceding years. Again during the twenties we lent other countries the money with which to buy the excess of our exports over our imports. For a number of reasons it is now clear that such loans, many of which were quite unsound, could not continue, so that a decline in exports could have been foreseen; but in 1929 the decline had not yet occurred.

### The Role of Excessive Saving

It is sometimes argued that profits were excessive in 1929. Business cycle theorists are not agreed on the role of profits in fluctuations. One group suggests that it is the squeezing of profits in a profit-seeking economy that is responsible for depressions, while a second stresses that profits are predominantly received by the rich and may therefore contribute to the possibility that the saving of one period will be in excess of the investment of the following period. Factually, profits after corporate taxes were relatively high in 1929, so that the depression can hardly be explained in terms of a squeezing of profit margins. The other alternative—that excessive profits contributed to excessive saving—can only be examined in terms of the overall relationship of saving and investment.

We have seen that the distribution of income in 1929 was more unequal than it is today. An unequal distribution of income, whether the result of large profits or of other influences, may intensify the likelihood of fluctuations by increasing the possibility that saving will be in excess of the investment that businessmen are willing to undertake. If saving is in excess of investment from one period to the next, it must mean that income is falling. Hence there clearly cannot have been any excess of saving while incomes were increasing up to 1929. Moreover, in that year, as we have just seen, investment as a percentage of the national income increased—which does not suggest that business was running out of investment opportunities. In addition, during the twenties the rich showed little reluctance to consume their incomes, and the purchase of a steam yacht is as stabilizing as any other type of consumption (however much less desirable it may be from the social point of view). It seems fair to conclude, therefore, that, although greater equality in 1929 might have made for greater stability, the prevailing inequality was not a major cause of the Great Depression and the change that has taken place since 1929 cannot be counted upon to ensure stability in the future.

## The Role of Vulnerability

What, then, was wrong? In my judgment not much was wrong if by "wrong" one refers to developments in the economy that made the continuance of prosperity impossible. Obviously stock prices and exports were bound to decline, but even both together would hardly have been insurmountable in themselves. A major factor in the situation, as I see it, was the extent to which the economy had become *vulnerable* as a result of the long-continued prosperity. In other words, it seems likely that businessmen, though they were investing more than ever before, and consumers, though they were buying more cars than ever before, did not feel that their need for investment or cars was particularly urgent, but were instead prepared to postpone spending and to "wait and see" what impact on the economy the severe break in stock prices was going to have. In short, if this interpretation is correct, the inevitable decline in the stock market would not normally have been of major importance, but it became important because it came at a time when long-continued prosperity had rendered the economy vulnerable to any shock to confidence. It also follows that the depression cannot be blamed on obvious defects in the economy—and especially on defects which have since been corrected. This is important because many people are convinced today—exactly as they were before 1929—that severe depressions are impossible. Actually we shall see that there is evidence that the American economy today possesses some of the elements of vulnerability that it possessed in 1929; but the fact of vulnerability does not, of course, make a severe depression inevitable.

The course of the contraction tends to confirm this emphasis. For after 1929 it was not precipitous. In fact, electric utilities, where production had been increasing rapidly and construction takes a long time to complete, actually invested *more* in 1930 than in any previous year. Undoubtedly those who said repeatedly that "the country is basically sound" and "prosperity is just around the corner" believed what they said. But what actually happened was that overall spending declined from 1929 to 1933. The decline was interrupted by expansions during both the spring of 1930 and 1931, but in both cases the expansions proved to be no more than temporary.

### The Role of the Collapse of the Banking System

We have seen that the longer a depression continues, and the deeper the decline in production, the harder it is for economic units to postpone expenditures and run surpluses. As a result it is conceivable that, had there been no monetary difficulties, the economy might have reached equilibrium toward the end of 1931. Instead, the monetary difficulties that followed Great Britain's departure from the gold standard in September, 1931, already mentioned in Chapter 45, caused a continuing contraction in the quantity of money and the flow of spending. For, as reserves declined, banks tried to contract their deposits by liquidating a part of their holdings of bonds. This in turn caused so severe a break in bond prices as to leave many banks technically insolvent, as their assets, including bonds valued at the prevailing market price, were not equal to their liabilities. The existence of widespread insolvency was only slowly recognized; but, when it became known late in 1932 and early in 1933, it led to increasing runs on banks, culminating in the national bank holiday declared by Roosevelt as his first official act in March, 1933. There is little doubt that the banking collapse, which is quite unlikely to occur again, was responsible for an important part of the *magnitude* of the Great Depression. For, as noted earlier, around 40 percent of the total decline in production from 1929 to 1933 took place after September, 1931—in contrast to the situation in Great Britain, where the decline was less than 10 percent.

### Recovery from 1933 to 1937

In most countries of the world, recovery began in the fall of 1932; even in the United States a revival commenced at that time, but was reversed by the continuing collapse of the banking system. Contraction stops and recovery starts when a net surplus for the economy as a whole is replaced by a net deficit. One factor in the reversal was the ending of the contraction in the money supply. For no one really wanted the currency that had been flowing into circulation. As a result, as soon as confidence in the banking system was restored, currency started to return to the banks. In addition, the Federal Reserve System expanded reserves by open-market operations, and there was a large subsequent inflow of gold (following devaluation and the advent of Hitler), so that from 1933 onward the banks found themselves with plentiful reserves. But perhaps an even more important factor in reversing the decline was the reduction of business surpluses. For in 1933 reported losses of corporations about equaled their depreciation allowances; this meant that, even if no depreciation allowances whatsoever were being reinvested, the current contribution of business would nonetheless have been substantially neutral. But by that time deficits on the part of income recipients and governments were becoming increasingly widespread. Hence, as the current contribution of business approached neutrality, an overall expansion in spending occurred.

At the start the contribution to recovery on the part of the federal government—except perhaps psychologically—was small, for Roosevelt had promised during his campaign to balance the federal budget and at first attempted to raise taxes and reduce spending. Moreover, when business is forced into a loss because it cannot drop employees as fast as its sales decline, the loss is stabilizing in the period in which it occurs, but it leaves businessmen under pressure to cut their expenditures in following periods (if only to avoid bankruptcy). Particularly in 1933, much of the impact of the government deficit and the revival of consumer spending was offset by the delayed reaction of business to the prevailing level of losses, so that the net expansion achieved in 1933 was small.

After 1933 the expansion was steady but not rapid. On the consumer side the most important cause of the increase in spending was probably the length of time that had passed since durables had been replaced.

Also, 1933 saw the start of an upturn in housing, though the general level of income was so low that the expansion was slow. In addition, not as a result of any understanding of the economics involved, but primarily out of humanitarian sympathy with the plight of the unemployed, the federal government increased its expenditures in 1934 and subsequent years.

The slowness with which investment recovered prevented these developments from bringing about a more rapid expansion. As production in 1933 was at two thirds the 1929 level, at least a third of capacity—presumably the least efficient third—was idle. Any decision to replace operating equipment, therefore, involved a comparison of new equipment with relatively efficient existing equipment. To illustrate, suppose a firm has three trucks which are two, four, and six years old, but has laid up the oldest one. At least until the third truck is put back into operation, purchase of a new truck involves replacing, not a six-year-old truck, but one only four years old. It is this that makes recovery from a severe depression so slow and difficult at the start—but increasingly rapid as relatively obsolete capacity is called back into use and replaced. For this reason recovery steadily gained momentum in 1936 and 1937.

### The Recession of 1937

By 1937 output had reached the 1929 level, but unemployment remained high, both because the increase in productivity from 1929 to 1937 permitted the same output to be produced with less labor and because the increase in population had caused an increase in the labor force. Instead of continuing to expand, income and output declined drastically in the second half of 1937. One reason for the violence of the decline was the memory of 1933, which was still fresh, but three other factors appear to have been important. First, the current deficit of the federal government contracted sharply in 1937. It had been unusually large in 1936: the "bonus" promised those who had served in World War I was "prepaid" in that year. But the inauguration of the social security program in 1937 drastically altered the picture, for at the start large amounts of taxes were collected before anyone qualified for benefits. Moreover, because social security accounts are kept separate, the extent to which the social security surplus was in fact offsetting the general deficit was not widely recognized at the time.

Second, as the rate of expansion of income increased in 1936 and 1937, more and more of the increase in spending took the form of an increase in prices rather than output. This is relatively normal in the later stages of recovery, but in 1937 the increase in prices was intensified by the rapid unionization then taking place. In addition, since the Roosevelt Administration had announced its intention of bringing about a "reflation" of prices after 1933, it was inevitable that there should have been inventory speculation, intensifying as the rise in prices intensified. To an important extent, therefore, 1937 represented a severe inventory cycle. It had, in fact, certain similarities to 1920, for the rise in prices was great enough to cause postponement of the purchase of durables and impede the recovery in housing.

Finally, in the hope of restricting the rise in prices, from 1936 onward the Reserve System tried to limit the expansion of the money supply by raising reserve requirements and the rediscount rate progressively. There are two points of view regarding this action. One criticizes the Reserve System for restricting the money supply when unemployment remained high, arguing that the restriction contributed significantly to the 1937 decline. The other argues that the 1937 reaction would have been even worse if the Reserve System had not tried to check the increase in prices. The choice between the two points of view depends on the importance one attaches to reactions to price increases as a factor in the decline. Because reactions to price increases were, in my judgment, important at that time, the Reserve efforts appear to me to have been, on balance, helpful, though in the light of hindsight the reversal of policy in 1937 was rather slow.

Perhaps the most memorable thing about the recovery from the 1937 recession is that a deliberately created federal deficit was used for the first time to promote recovery; in February, 1938, Roosevelt specifically asked Congress to unbalance the budget as a recovery measure. Undoubtedly the resulting deficit aided recovery, as did the establishment of an "easy money" policy by the Federal Reserve System. But, in addition, as soon as prices fell, purchases in many areas immediately increased—exactly as they had in 1921. Housing was higher in 1938, when overall activity was depressed, than in 1937—repeating the 1921 experience—and expenditures by business on both construction and producer durables recovered rapidly, as a result of both the length of time that had passed since there had been significant spending on construction and the relatively high use of capacity that prevailed in 1938. As a result of all these influences, recovery was rapid and the 1937 level of activity was regained in 1939.

### The Impact of the War

The 1939 level of activity, however, was no higher than had been achieved a decade before in 1929. No part of the increase in productivity over the decade had gone to increase the available supply of goods and services; instead, all had been used to reduce hours or to increase unemployment, so that 8 million remained unemployed in 1939—approximately one sixth of the labor force. Moreover, unemployment persisted despite substantial federal deficits; in the absence of the war it seems likely that unemployment would have continued well into the decade of the forties, so that the Great Depression offers clear proof of the difficulty of achieving full recovery from a severe depression under peacetime conditions.

But under the impact of the war recovery was rapid. Heavy purchases by Great Britain and France, followed by our own rearmament expenditures brought about steady expansion; hence, when war began for the United States with the attack on Pearl Harbor in December, 1941, deficiency unemployment had been substantially eliminated.

In fact, the problem rapidly became the prevention of severe inflation. Control over the flow of spending was first attempted by monetary means. A sharp rise in velocity resulted as monetary restraint caused idle balances to be put to use, but, even though velocity in 1942 was higher than it had been in any year since 1929, it appears likely that further increases would have continued to impede control over the flow of spending by monetary measures. With the inauguration of widespread price controls in the spring of 1942, however, reliance on monetary restraints substantially ceased and a vast expansion of the money supply was permitted—to make sure that the Treasury had no difficulty in borrowing the money it needed to finance war expenditures. The result of the vast expansion was to make a postwar inflation inevitable; but a discussion of the matter will be postponed until the problem of inflation is considered in Chapter 51.

### The Postwar Prosperity

An interesting aspect of the immediate postwar period is that there was no repetition of the 1920 experience. A depression was widely expected—either during the winter of 1945–1946, when demobilization was at its height, or shortly thereafter. But there was in fact no significant setback until 1949. One factor in the situation may have been an awareness of the inventory losses that had been suffered in 1921. In any event there appears to have been far less inventory speculation after World War II than after World War I.

Of considerably greater importance is the fact that price controls kept prices relatively low until they were removed in the middle of 1946. Moreover, backlogs as a result of the greater duration and impact on production of World War II, were far larger. Closely related was the existence of the excessive monetary balances inherited from the war, with which additional purchases could easily be financed. Finally, though the point may have required too much understanding of economics to have been generally recognized, there is the fact that the size of any possible price decline after 1946 was severely limited by the existence of a strong and active labor movement that would have prevented any significant decrease in the level of wages.

In other words, slight differences in circumstances can produce wide differences in results. Postponements took place in 1920 and 1937, despite backlogs, because there were, on balance, enough people who felt that it was "a bad time to buy." There were, of course, those who felt that the period immediately after World War II was "a bad time to buy"—especially Sewell Avery, then President of Montgomery Ward. So adamant was he against expansion of his company at "inflated" postwar prices that Ward's sales declined from 60 percent of those of Sears, Roebuck in 1948 to less than 30 percent a decade later! Others besides Avery undoubtedly from time to time had reservations. But the relatively low level from which prices started in 1946 and the relatively slow rate of increase—at least when set against the size of the backlogs and the ease with which monetary balances in excess of needs permitted purchases to be made—meant that enough people came to accept higher prices so that there was in fact no interruption of spending until 1949.

### The Recessions of 1949, 1954, and 1958

Let us compare the behavior of the major areas of the economy during the three postwar recessions by dividing the level of output in the recession year by the level in the previous year; the results are summarized in Table 48-1. By far the most interesting thing about these recessions is the variety of patterns that the economy followed. Note, first, that the recessions were quite mild. In 1949 the main unfavorable factor was the decline in inventories—to be expected after the sharp rise in prices that had occurred. While housing and plant declined insignificantly and producer durables noticeably, both consumer durables and government spending increased by important amounts. As a result, recovery was well under way by the middle of 1950 even before the stimulus of the rearmament expenditures induced by the Korean War.

A certain amount of anticipatory buying by both business and consumers developed during 1950 out of fear that shortages of the World War II sort might occur. This led to the establishment of price controls late in the year, but, as they were imposed just as the speculative spending was coming to an end, their impact was minor. Of more lasting importance was the encouragement of certain types of plant expansion and the discouragement of other types in order to make sure that rearmament needs were met. For the investment which was postponed

TABLE 48-1

Changes in Output in Three Recessions

(Recession Year Divided by Previous Year)

| | 1949 | 1954 | 1958 |
|---|---|---|---|
| Consumer durables | 106.9 | 97.9 | 92.5 |
| Consumption excluding durables | 101.9 | 101.8 | 102.3 |
| Total consumption | 102.5 | 101.2 | 100.9 |
| Housing | 98.2 | 113.2 | 105.9 |
| Plant | 99.1 | 102.1 | 90.3 |
| Producer durables | 86.8 | 92.4 | 78.9 |
| (Inventories [a] | −8.0 | −2.1 | −3.8) |
| Gross investment [b] | 79.3 | 100.4 | 77.7 |
| Government | 112.1 | 89.3 | 105.0 |
| Gross national product | 99.9 | 98.4 | 98.4 |

[a] Change in billions of dollars from previous year.
[b] Including net exports of goods and services.
SOURCE: *Survey of Current Business*, July, 1961.

undoubtedly contributed to the recovery from the 1954 recession. In rather marked contrast to 1949, as Table 48-1 shows, the inventory decline in 1954 was relatively minor, but both government and consumer durables also declined. On the other hand, a sharp increase in housing and a smaller increase in plant construction offset both the decline in inventories and producer durables and brought about a small *increase* in total gross investment. The continuing influence of backlogs was shown by the fact that automobile production in 1955 reached a level that has not since been equaled, while housing also reached a peak that was not exceeded until 1959. Moreover, the Federal Reserve System reacted swiftly and aggressively to the 1954 decline, permitting monetary ease to prevail from the middle of the year onward. In short, effective Reserve action, coupled with continuing backlogs for housing, plant construction, and autombiles, ensured a rapid recovery from the 1954 recession.

### The Recession of 1958

The possibility that the recession which began in the fall of 1957 would be serious was stronger than at any time since the end of the war. It occurred, first, at a time when a pronounced effort was being made by the Eisenhower Administration to reduce federal spending without reducing taxes in order to secure a budget surplus. Even more important, backlogs for durables were certainly less urgent than at any time since 1929, as is shown by the subsequent decline in both producer and consumer durables (summarized in Table 48-1). In the case of automobiles, disenchantment with the models then being offered by American producers not only caused a sharp increase in imports but, as already noted, reduced sales of domestic cars by 46 percent from the level that had been reached in 1955. As plant construction and inventories both declined, gross investment as a whole fell even more than in 1949. Moreover, although the need to complete plant and equipment already ordered moderated the drop in spending up to the middle of 1958, estimates of future spending on plant and equipment, based on polls of businessmen's intentions, showed that a sizable decline was in prospect. Finally, the Federal Reserve System, which had become increasingly concerned with the prevention of inflation, was much slower to react to the decline than it had been in 1954, for fear that too strong a reaction would add to subsequent inflationary pressures.

Just how much of an effort under the circumstances the federal government should have made to offset the decline is a matter of controversy. There were economists who felt that the inherent dangers of the situation justified a strong reaction; but the Eisenhower Administration did relatively little because it also feared that drastic action would add to subsequent inflationary pressures. In the light of later developments it can be argued that the decisions of the Administration and the Reserve System were justified. For three favorable developments brought the decline to an end by the middle of 1958. First, Khrushchev helped immensely by launching Sputnik, the first Earth satellite, in the fall of 1957; the launching ended efforts to balance the budget and caused an expansion of federal spending which had reached substantial levels by the time that the recession was at its worst. Second, there was a marked improvement in housing. After World War I housing rose steadily to a peak in 1925, declined slowly until 1928, and then rather sharply in 1929, as it became generally recognized that construction had more than caught up with housing needs. The pattern after World War II was quite different. Although it expanded until 1950, the impact of the Korean War caused a drop in housing construction, so that the 1950 production was not significantly exceeded until 1955. Thereafter a new factor entered the picture. Most mortgages on new houses in recent years have carried a government guarantee, issued only if the interest rate was no higher than a specified level. During 1956 and 1957, as the Reserve System attempted to slow down inflation by restricting the money supply, interest rates rose above the level specified by the government. Hence the funds available for mortgages were sharply reduced, as lenders sought to lend where there were no restrictions on the interest that could be charged. As a result, housing declined during a period of general prosperity because of a shortage of mortgage money rather than because of an absence of demand. But this meant that, as soon as interest rates fell in 1958 to levels below the specified maximum, mortgage money became readily available and housing construction expanded in 1959 to the highest level in the postwar period. Clearly housing has not become unfavorable since World War II in the way that it was before 1929.

One other significant, though controversial, favorable influence is worth noting. In 1958, consumption, excluding durables, expanded somewhat more than it had in any of the other postwar recessions. One may treat this as merely an offset to the sharper decline in consumer durables, but it seems closer to the mark to consider it as an independently favorable factor. In any event, had consumption not been well maintained, a far larger decline would have occurred.

As soon as it became clear that consumption was going to be maintained, that housing was expanding, and that federal spending was going to result in a large deficit, the incentive to continued inventory liquidation disappeared. Mere cessation of liquidation, as it involves the elimination of a surplus equal to the previous rate of liquidation, is itself stimulatory, and if it is followed by rebuilding of inventories as businessmen find themselves short of goods to meet the continuing and perhaps expanding demand, a further stimulation is provided. A reversal of this sort took place during the middle of 1958, bringing the recession to an end.

### Recent Events

After a recovery of somewhat more than a year, output declined in the fall of 1959 as a result of the severe steel strike that occurred at that time. The steel strike was settled late in the year and expansion resumed; but in the fall of 1960—after a total expansion of only a little over two years—the economy once more turned downward. Even more disconcerting was the fact that unemployment, which had averaged 6.8 percent of the labor force during 1958, was still 5.1 percent at the *peak* of the recovery in 1960. The recent apparent slowing down in the rate of growth and the continuing high level of unemployment are matters to which we shall return in Chapter 52.

# 49

# How the Level of Income Is Determined

## Introduction

This chapter presents the formal analysis of how the level of income is determined. Any present-day formulation inevitably draws upon the work of John Maynard Keynes. But this chapter presents more than a mere summary of the Keynesian analysis. Rather, it attempts to consider the Keynesian contribution in terms of both the circumstances in which the *General Theory* appeared and the objectives which Keynes sought to achieve with his presentation. It is because of this broader purpose that formal analysis has been postponed until after the history of recent fluctuations had been presented.

We shall also want to consider why it is that Keynes was felt to be so "revolutionary." For no book on economics in this century has had an impact comparable to *The General Theory of Employment, Interest, and Money,* which was published in 1936. By its admirers it is credited with starting the "Keynesian Revolution," which should make possible the elimination of the business cycle; by its detractors, with responsibility for policies likely to bankrupt the nation! What is it in the *General Theory* that has caused such strong reactions?

## The Formal Analysis of Keynes

It is not particularly difficult to summarize the bare bones of the formal analysis that Keynes put forward to explain the level of income. Four variables are involved. The first is our old friend the *quantity of money.* The second is *liquidity preference,* which summarizes all the reasons why people want to hold money. The quantity of money (supply) and liquidity preference (demand) determine the rate of interest. Next the rate of interest and the *marginal efficiency of capital*—which depends on the expected rate of return on money invested in newly produced capital assets—determine the level of investment. And finally, the level of investment and the *marginal propensity to consume* determine the overall level of income.

Thus the Keynesian formulation summarizes under four headings the various factors which influence the level of income: the quantity of money, liquidity preference, the marginal efficiency of capital, and the marginal propensity to consume. In this chapter we are mainly concerned with explaining why Keynes was "revolutionary" and how he differed from "classical" economics in regard to income determination. To achieve these objectives a detailed understanding of the Keynesian determinants of the level of income, and of the way in which they operate, is not necessary; let us simply grant that, properly defined, the four Keynesian variables "determine" the level of income in exactly the same way that $M$ and $v$ in the quantity equation "determine" $p$ and $O$.

To get at the essential difference between the Keynesian and the "classical" approach, let us examine how two different "hydraulic systems" might operate, and then see to what extent they have parallels in the real world. This procedure is desirable because it will focus attention on the assumptions of both the Keynesian and the "classical" analysis.

### System I

The diagram of System I, presented in Figure 49-1, shows a closed circuit in which the water flows in the direction of the arrows. Assume that the channel slopes downward to a low point at the pump inlet, and that it is then raised to the highest point in the system at the pump outlet, whence it flows by gravity around the circuit back to the pump inlet. (Because we shall find that the pump has no economic parallel, it is surrounded in the diagram by dotted lines.) Note that Gate P divides the water as it flows past into Stream C and Stream S. The latter stream drops into a pond, the level of which is maintained by a fixed spillway. Over this spillway water flows into Stream I, which joins Stream C just before Point Y, after which the water flows on to the pump inlet and starts the circuit all over again.

Will the setting of Gate P have any effect on the size of the stream at Y? Provided that the pond is small and the flow over the spillway unrestricted, any effect will be quite small. For if more water were to be diverted into Stream S, there would be an offsetting increase in the flow over the spillway and into Stream I, leaving the size of the flow at Y

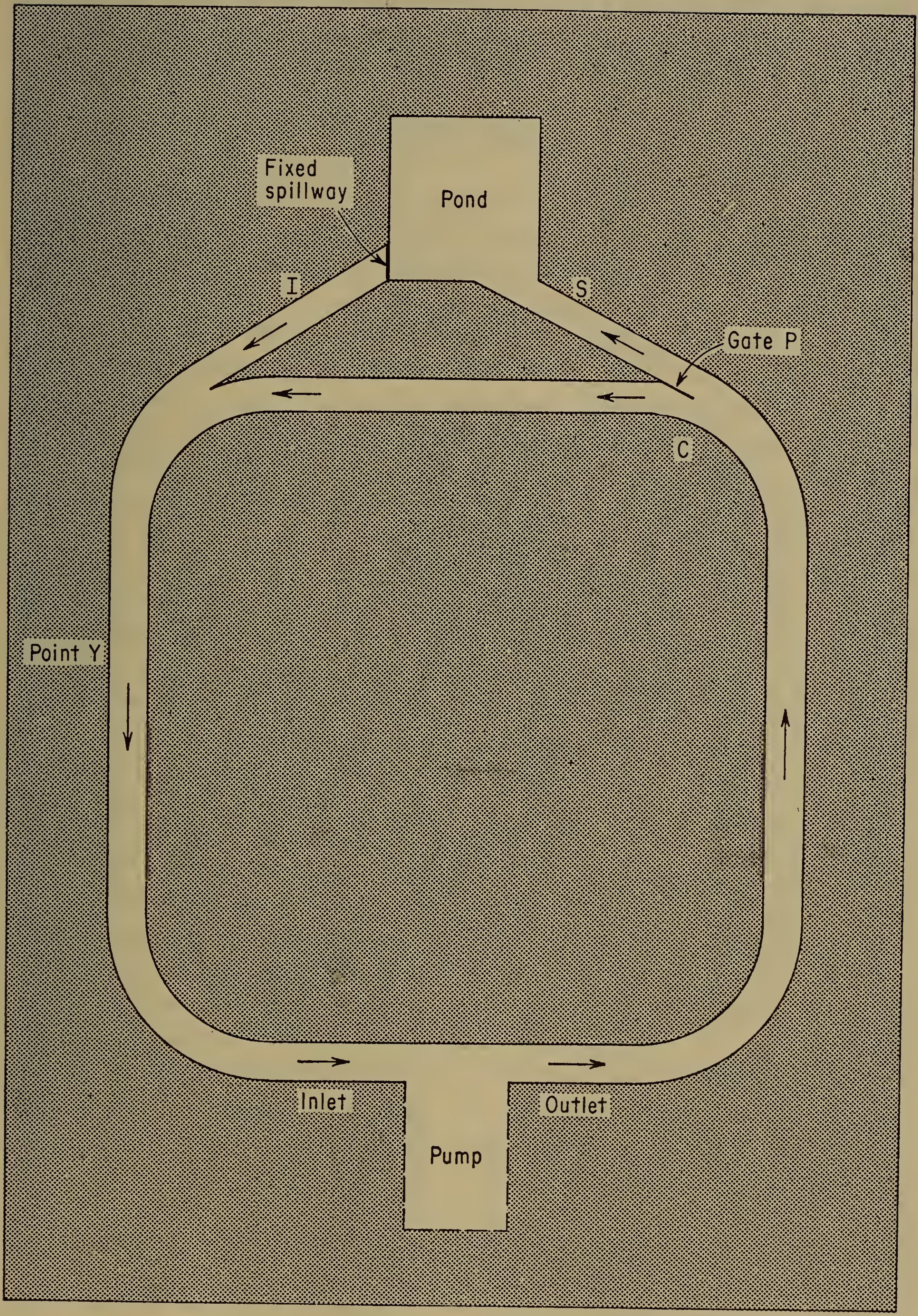

Fig. 49-1. Diagram of System I.

substantially unchanged. Clearly under such circumstances the way to increase the flow through Stream I would be to set Gate P so as to increase the flow through Stream S.

### System II

Let us now turn to the diagram of System II presented in Figure 49-2. Only two things have been added: Gate A, which restricts the flow of water out of the pond, and a new outlet for the pond at H. But, although these changes may seem small, the way System II may operate is quite different from the operation of System I. Suppose we start with Gate A closed, the channel dry, and all the water in the pond. (Recall that Stream S *drops* into the pond, so that no water can flow out back of the pond into Stream S.) Next suppose that it takes an hour for water to flow around the circuit, that Gate A is opened so as to allow 1 gallon to flow out of the pond, and that Gate P is set so that ½ of the flow is diverted into Stream C and ½ into Stream S.

Under these circumstances how much water will flow past Y? During the first hour the gallon released from the pond through Stream I will, of course, flow past. But none of the water diverted by Gate P into Stream S will continue, as Gate A was closed after releasing the initial gallon. Even if no more water is released from the dam, however, half the original flow—or ½ gallon—directed into Stream C by Gate P will flow past Y during the second hour, half of that half—or ¼ gallon—during the third hour, ⅛ gallon during the fourth hour, and so on continuing at a slowly diminishing rate until nothing is left. In other words, the total flow passing Y will be the sum of 1 plus ½ plus ¼ plus ⅛ plus $1/16$ continuing an infinite number of times. Note that the total, progressing from 1½, 1¾, 1⅞, to $1\,15/16$, is approaching 2. What we have here is an infinite series. It can be summed up by the mathematical formula $1/(1 - \frac{1}{2})$, where the fraction is the amount which continues to flow. In this case solving the formula gives the value 2. This means that, when 1 gallon is released from the dam, a total of 2 gallons will ultimately flow by Y if Gate P is set at ½. But had Gate P been set to divert ⅘ into Stream C, then the total flow past Y resulting from the release of a single gallon by Gate A would be 5 gallons rather than 2.

Suppose we change the example and think, not of a single gallon released by Gate A, but of a gallon released *every hour*. Then our formula will give us the amount that will ultimately flow past Y *in an hour*. For, with Gate P set at ½, the flow past Y during the second hour will be 1½ gallons, during the third hour 1¾ gallons, and so on as before. It follows that, if Gate P is set to divert most of the flow into Stream C,

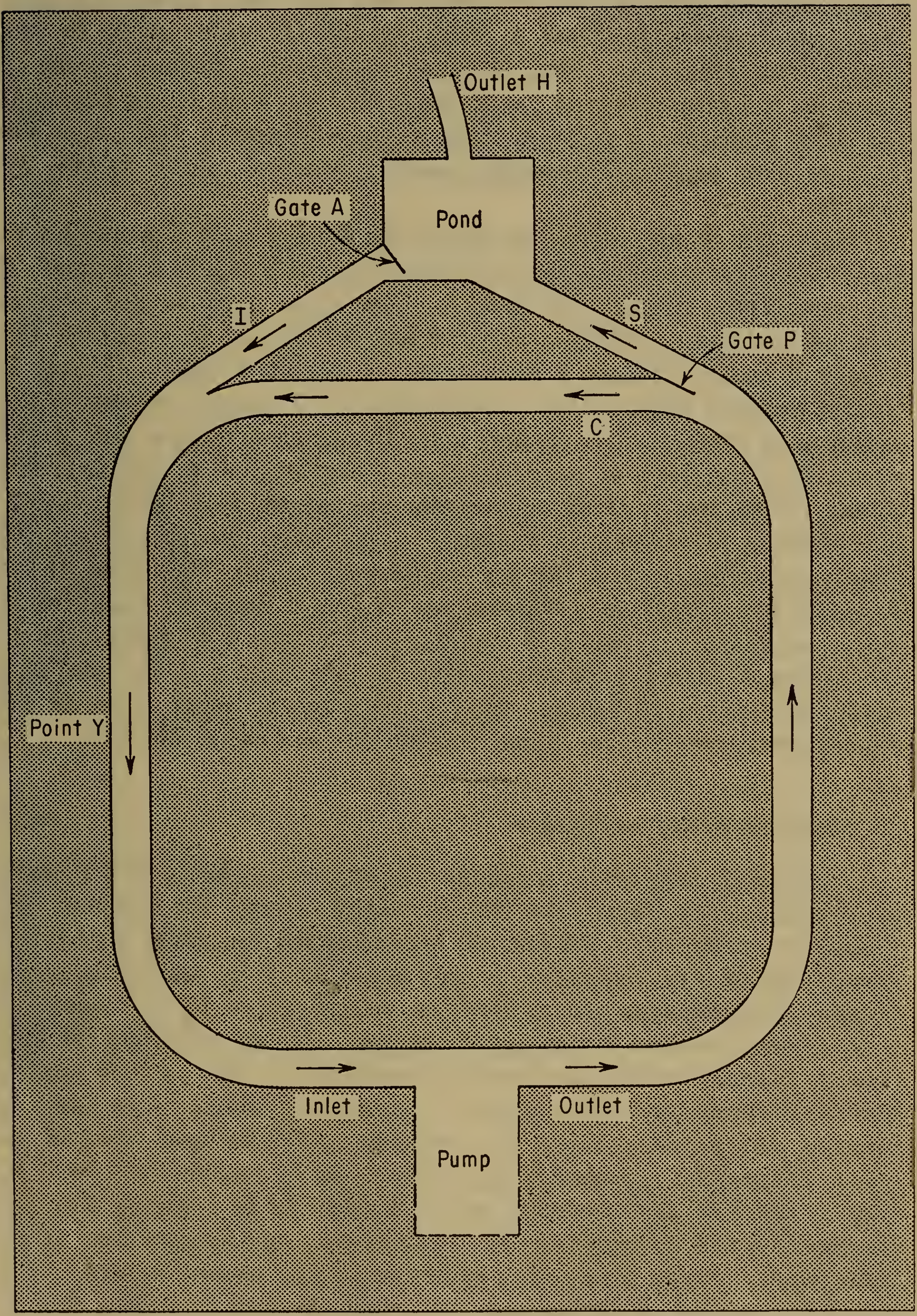

Fig. 49-2. Diagram of System II.

a large amount of water will ultimately flow by Y as a result of a relatively small release by Gate A. We may call the value given by our formula the "multiplier." For, when we multiply the original release of water by the multiplier, we get a result that gives us either the total flow past Y ultimately resulting from a single release by Gate A or the flow per hour past Y ultimately resulting from an hourly release by Gate A.

Note that in the latter case the water flowing past Y continues to increase until the amount diverted into Stream S by Gate P is equal to the water being released by Gate A. Thus when a gallon per hour is released by Gate A, the flow of water will continue to expand until the amount diverted by Gate P into Stream S reaches a gallon. If Gate P divides the flow equally, then a total flow of 2 gallons represents the equilibrium level because at that level the amount flowing out of the circuit into Stream S is exactly equal to the amount flowing into the circuit via Stream I. If for any reason the stream were larger than 2, the diversion into Stream S would be larger than the replacement via Stream I and the level of the flow would tend to fall. Vice versa, if the flow were less than 2, the diversion into Stream S would be smaller than the replacement via Stream I and the level of the flow would tend to rise. Again, if Gate P were set to divert 4/5 into Stream C, the total flow would have to rise to 5 before the diversion into Stream S matched the replenishment via Stream I and equilibrium was again achieved.

### Economics of the Two Systems

Now let us turn to the economics of our two systems. The parallel is, of course, with the circular flow of money through the economy; for this no pump is needed, so that we can disregard the pump in the diagram. Starting with System I, we can take Gate P as equivalent to the *propensity to consume,* which involves the decision as to how income is to be divided between saving and consumption. If we substitute the propensity to consume for the fraction continuing to flow in our mathematical formula, we again obtain a *multiplier,* which, when used to multiply any initial quantity of investment, gives the total level of income that can be expected to result from the investment involved. So long as the level of investment or the propensity to consume does not change, this will of course be the continuing or *equilibrium* level of income. Our pond can be taken as equivalent to the *capital market,* which is fed by the flow of saving and from which in turn there is a flow of funds to be spent on investment. Point Y we may take simply as the point at which we measure the *level of income;* it could, incidentally, be anywhere on the circuit. System II, in its mechanics, is only a little more complicated. Gate A we may take as equivalent to the *decision to invest,* and Outlet H as allowing funds to escape from the capital market into *hoards.* Note that money which is not used for investment after flowing into the capital market may either be held in idle balances or disappear as a result of a contraction of the money supply. Though it may be stretching the term a bit, we shall include both of these alternatives in the concept of "hoards."

Do the systems really work sufficiently differently to justify all this discussion? Suppose we are interested in expanding investment. Under what we may now call Economy I, the way to do so is simply to decide to save more. With Gate P set to enlarge the flow into Stream S, the outflow through Stream I will inevitably increase. The reason is that Gate A is, in effect, wide open and Outlet H nonexistent, which means in economic terms that *all the saving that is provided will in fact be invested.*

But with Economy II the situation is quite different. Suppose we start with the decision—independently arrived at in a manner we need not immediately examine—to invest $20 a year. We may think of this as equal to water released at Gate A by an opening in the dam rather than over the spillway. Second, let us think of the spillway at Outlet H as being lower than the spillway at Gate A. Under these circumstances—assuming that the spillway at Outlet H is large enough—the flow of water at Gate A is *entirely independent* of the flow into the pond through Stream S.

Two things follow under these conditions. We have already seen that, with any given release by Gate A, the flow past Y, or the level of income, will be larger, the *smaller* the amount that is diverted into Stream S by Gate P—or the less that is saved. Recall that, where the propensity to consume was ½, the multiplier was only 2 and $20 of investment would lead to a mere $40 of total income. But if ¾ was diverted to consumption and only ¼ saved, then the multiplier would be 4 and income $80. In short, with *any given level of investment,* the less that people try to save, the *higher* will be the level of income.

## The Paradox of Thrift

But suppose the decision to invest bears some relationship to the level of income. Here we have the makings of not only a paradox but a complete contradiction of the operation of Economy I. To illustrate, suppose that, when the decision to invest $20 with which we started was made, those investing anticipated that income would be $80. But suppose in practice the propensity to consume proves to be ⅚ and the multiplier 6, so that income turns out to be $120. Under the circumstances those investing may well *increase* their investment to perhaps $30, which would in turn lead to an income level of $180. Vice versa, if starting with $20 of investment and $80 of income, people tried to save ⅓ of their income, then the multiplier would only be 3 and income $60. But if this is less than those who decided on the original $20 of investment anticipated, investment would decline to perhaps $15, which would in turn lead to a further decline in income to $45.

Here, then, we have the "paradox of thrift," which is perhaps the essence of the "Keynesian Revolution." For in Economy I the way to increase investment is to *increase* saving. But in Economy II the exact opposite is true: the way to increase investment is to *decrease* saving. For in Economy II the "paradox of thrift" applies—the *more* people save, the *less* investment there will be!

Is it any wonder that Keynes roused strong emotions? For generations—really since the Protestant Reformation and the rise of the middle class—saving had been praised as a virtue and luxurious consumption condemned as a vice. Here was Keynes saying that, under modern conditions, what the economy needed was *more* consumption—luxurious or otherwise—and *less* saving! Keynes, moreover, gloried in his unorthodoxy, going out of his way, for example, to praise Mandeville's *Fable of the Bees.* Mandeville's argument was that all human desires are essentially evil, so that catering to them meant catering to "private vices," but that the "public benefit" of prosperity required spending. Hence spending on "private vices" was essential if the "public benefit" was to be served! So pernicious was this argument felt to be even in the eighteenth century, which was not noted for its aversion to vice, that the volume was condemned as a public nuisance by a grand jury in 1723. Even in the twentieth century it cannot be said that Keynes made the reception of his volume easier by appearing to declare in favor of vice!

### The Flow of Saving and the Decision to Invest

But which is right? To increase investment should an economy try to save more or less? Here is where our hydraulic analogies pay off. For all we added to transform System I into System II was Gate A and Outlet H—which had the effect, in economic terms, of *isolating the decision to invest from the availability of saving.* Is the decision to invest independent? Certainly not at all times. In the case of a storekeeper operating as an independent proprietor, if he buys an air conditioner for his home, he is consuming; but if he buys one for his store, he is at one and the same time saving and investing. Far from being independent in this case, the act of saving is identical with the act of investing.

But this is not the usual situation. The decision to save and the decision to invest are often made by quite different persons, with the saving having to flow through the capital market before being invested. The question that we must answer is this: Will an increase in the funds available in the capital market cause anyone to invest more? In terms of our hydraulic analogy, will a rise in the level of the pond influence the amount of water being allowed to pass through Gate A? The decision to invest—to open Gate A—is, of course, made mainly by the managers of businesses, who borrow in the capital market in order to be able to buy plant and equipment beyond what they can purchase with retained earnings and depreciation allowances. Clearly there are times when more funds in the capital market are likely to lead to an increase in investment. If business is active and businessmen are anxious to borrow, then interest rates are likely to be high and borrowing difficult. Both the high interest rates and the reluctance of lenders to make loans to those they consider poor risks are likely to mean that there is a fringe of "unsatisfied borrowers." Under such circumstances an increased flow of saving is likely to satisfy a part of those who would otherwise be unsatisfied, with none of the funds involved remaining in the capital market pond.

Another way of getting at the point at issue is to say that the *decision* to invest and the *ability* to invest are not always identical. Keynes, writing at a time when the capital market was flooded with idle capital balances seeking profitable investment, tended to assume that the decision to invest would invariably be implemented. But the *desire* of a businessman to invest results in investment only if he can find someone to *lend* him the required funds. On the other hand, the fundamental assumption of the classical point of view, which gives us Economy I, is that funds available for lending would invariably be invested, so that an expansion of saving *always* resulted in an expansion of investment. The mechanism relied on was the rate of interest: as more funds became available, it was believed that it would inevitably fall, causing the appropriate expansion of investment, so that the inflow to the capital market via the stream of saving would always match the outflow via the stream of investment.

### The Keynesian Contribution

One contribution of Keynes was to make clear that this did not always have to happen. After confidence in the banking system had been restored in 1933, there was a substantial expansion in the quantity of money; by 1936, when the *General Theory* was published, the total was considerably larger than it had been in 1929. But much of the newly created money was not being used; instead, it was being held in idle balances, as velocity remained close to the lowest level of the depression.

Moreover, interest rates had fallen to such low levels that it was hard for them to fall further. We have already discussed (in Chapter 45) why this was so in explaining why banks at that time held reserves in excess of Reserve requirements. But the same influences induced those who held monetary balances to keep them idle. In short, at such times the problem is not a shortage of funds but getting someone to invest the funds that are readily available. For the time he wrote, the emphasis of Keynes made sense.

Second, for many purposes the usefulness of the Keynesian analysis is unexcelled. His presentation, for example, makes readily understandable the case for certain types of remedial policies that Keynes was eager to promote. There is little doubt that the form of Keynes' analysis was much influenced by the policy conclusions to which it led, for Keynes was very much a political economist, anxious to achieve practical results.

But neither the contribution to our understanding of policy alternatives nor the implications of Economy II fully explain the "Keynesian Revolution." To understand his full impact it is necessary to recall the classical picture of our economy. Obviously economists had for a long time been aware of economic fluctuations. But those in the classical tradition believed that fluctuations were largely self-correcting and, in any event, would be unlikely to involve significant unemployment. They believed that fluctuations would be self-correcting because, if there were to be a decline for any reason in the flow of spending, it would have to mean that there were either large idle balances or large excess reserves, which would depress the interest rate and expand investment until the flow of spending resumed a normal level. Even if this did not immediately occur, classical economists generally remained undisturbed. They felt that reductions in wage rates could be counted on to bring about rapid absorption, even at the lower level of spending, of those who were unemployed. Hence a depression required no action by the government, especially no action that would disturb business confidence on which investment decisions depended or impede the reduction of wages that was expected to eliminate unemployment.

Obviously this sort of analysis did not make much sense in 1933. It was fairly clear that, whether or not one thought that wages *ought* to fall rapidly during a depression, under modern conditions they did not in fact do so. Moreover, economists came increasingly to suspect that, if wages fell, spending might also fall by an equal amount, which would leave the level of unemployment unchanged. And, as we have seen, interest rates obviously could not be counted on to behave in such a way as to eliminate idle balances and prevent declines in the flow of spending.

In contrast to this quite unsatisfactory classical picture of the behavior of the economy, Keynes suggested that four simple factors—the money supply, liquidity preference, the marginal efficiency of capital, and the marginal propensity to consume—determined the level of income *at all times*. The first three of the four determined the level of investment, and we have seen that, with any given level of investment and any given propensity to consume (any given setting of Gates A and P), there is only one level at which income will be in equilibrium, which is the level at which the flow into the system via Stream I is equal to the flow out of the system via Stream S. Moreover, there is nothing in the Keynesian analysis to suggest that all those who wish employment will receive it at the equilibrium level of income; it is quite possible that, if all the unemployed are to be provided with employment at prevailing wages, the level of income would have to be much higher than the prevailing equilibrium. The appeal of this way of looking at the economy in 1933 is obvious. It is no wonder that the impact of Keynes was "revolutionary."

### Some Problems Resulting from the Keynesian Approach

Let us stress once again that the formal validity of the Keynesian analysis is not in dispute; properly defined, it is completely valid. But certain aspects of the *emphasis* that has resulted do raise problems. There is, first, the failure of Keynes to attach any importance to saving. At least for the materialist, it would be a happy world if expanded investment were always promoted by luxurious consumption and riotous living! Unfortunately it is only under rather special conditions that we can have our cake and eat it too. All too frequently an increase in saving is essential if investment is to expand without creating inflation. Our hydraulic example can be used to illustrate why it is that saving is normally necessary. Suppose we have a situation in which the flow through Gate A is larger than the flow through Stream S—in economic terms, businessmen are investing more than the public is willing to save. The only way that this can continue is if the flow through Outlet H is reversed—if idle balances are coming back into use or the supply of money is being increased. But the quantity equation makes clear that, if $M$ or $V$ are increasing faster than the rise in $O$, it is inevitable that there will be an increase in $p$. In fairness to Keynes it should be pointed out that there is nothing in his analysis which *requires* the monetary authorities to continue to permit an increase in $M$; in fact, during World War II Keynes was himself very much concerned with the prevention of inflation. But the emphasis of his analysis on the crucial importance of the decision to invest and the relative unimportance of either saving or the money supply makes his detractors fear that policies stemming from his approach will cause inflation.

Second, Keynes placed primary emphasis on investment, arguing that the relationship of consumption to income was quite stable. He felt that there is a "stable psychological propensity" which determines the way in which additional income will be divided between consumption and saving and thereby sets the value of the propensity to consume. As Keynes himself recognized, the propensity is likely to vary continuously with variations in the level of income. Starting from a deep depression, with income at half its full employment level, an economy might, for example, consume $^{19}/_{20}$ of the first 10 percent increase in income, $^{9}/_{10}$ of the second 10 percent, and $^{4}/_{5}$ of the third 10 percent, with the percentage dropping steadily until full employment was reached. If this is so, what value of the propensity should we use? The answer can only be the *average* propensity for the change in income that is going to result from the given change in investment. But the change in income is exactly what we are trying to explain, so that we really have to know what the change in income is going to be to know which value of the propensity to use in determining the change in income!

Another way of stating the matter is to point out that, if we are *given* the amount of income that will be associated with any given level of investment, we obviously *know* the amount of income that will be associated with any given level of investment! But the propensity is nothing more than $1 - I/Y$, where $I$ is investment and $Y$ is income. Hence, when one is *given* the propensity appropriate to any given level of investment, one is in reality *given* the amount of income that will be associated with that level of investment! Hence, when Keynes said that income depends on investment and the propensity to consume, he was in effect saying that income depends on investment and the investment-income ratio.

Thus it appears that Keynes gave a revolutionary and exciting name to a rather humdrum and obvious concept. But the misbranding would be unimportant if the *relationship between investment and income were in fact stable.* Specifically, if from any given level of income, X billion dollars of additional investment could be counted on to result in Y billion dollars of additional income, the relationship—by whatever name it is called—would be both useful and significant. Intensive statistical efforts by a great many economists, however, have failed to discover a stable relationship between investment and income. As the difference between income and investment is consumption, this amounts to saying that consumption does not in fact appear to depend "passively" on income. Arguments against treating consumption as depending passively on income were already presented in Chapter 47. To repeat only two points, we noted that since World War II consumer durables have fluctuated *more* than has either housing or business construction and that, between 1955 and 1958, the number of cars sold declined by 46 percent. When quantitatively important components of consumption vary in so marked a fashion, it seems obvious that the variations will have repercussions on the relationship between investment and income and, therefore, on the income resulting from a given level of investment. It follows that any approach which disregards the behavior of consumption cannot possibly provide a full explanation of economic fluctuations.

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# Prospects and Remedies for Major Fluctuations

## Introduction

The American economy faces three closely related problems. First, there is the possibility of a major depression. We may define a major depression as one in which unemployment exceeds 10 percent. This is, of course, far less than we experienced in the Great Depression, when unemployment reached 25 percent, but there is little doubt that unemployment of as much as 10 percent would today have such profound repercussions as to constitute a major depression. Second, there is the problem of inflation. Third, there is the possibility of a high average level of unemployment due to incomplete recoveries from a series of minor recessions. Of these three problems the first will be considered in this chapter; the second primarily in the chapter which follows; and the third in the final chapter of this section.

More than thirty years have passed since the beginning of the Great Depression; there has been no remotely comparable decline. In fact, as already noted, the loss of production due to deficiency unemployment since World War II has probably averaged no more than 5 percent. Many developments in the economy since 1929 make a severe depression less likely, and some make it more likely. Let us, first, survey both the favorable and the unfavorable developments that have thus far taken place, and then attempt to appraise the prospects for a major depression. Finally, in the light of the prospects, some suggestions will be offered as to what might be done to minimize a possible major slump.

Many besides students unable to remember World War II have come to think of the Great Depression as a bit of ancient history that could not possibly be repeated in our present-day economy. In a recent poll, businessmen rated "recessions" as one of the least of their worries—only about 5 percent as worrisome, for example, as "inflation." Probably they are right. But keep in mind that people were just as convinced in 1929 that a severe depression was impossible. In fact, Irving Fisher was so convinced of continued prosperity that he predicted in the spring of 1929 that stock prices had reached a "permanently high plateau." Yet three years later stocks were worth less than a quarter of the level of the "permanent plateau"! The possibility of error in the effort to foresee the future should, therefore, be kept firmly in mind.

### Favorable Institutional Developments

A decline in income occurs because economic units of all sorts—business, government, and consumers—on balance spend less in the following period than they receive in the present period—in other words, because they run current surpluses. Hence anything causing people to spend more than they receive—in brief, run current deficits—can be expected to mitigate a recession. In recent years a number of developments have ensured an automatic increase in current deficits as income declines. One of the most important is unemployment insurance, which now covers most workers. The weekly benefits paid to those who become unemployed permit them to continue at least a part of their spending at a time when their earnings have completely stopped. Less important quantitatively, but working in the same direction, are the various efforts to aid agriculture. To the extent that the payments to farmers are financed by taxes levied on the rest of the community, they are not likely to be particularly stabilizing; those paying the taxes are likely to decrease their spending by roughly the same amount. But, where agricultural aid takes the form of guaranteeing a specific dollar price for a crop, the effect is to bring about a sharp expansion of government spending during recessions, for at such times the market price is likely to be far below the guaranteed price.

Increased spending on unemployment relief and agricultural aid is likely to cause a government deficit during recessions even if government revenues were unchanged. But government revenues are not likely to be unchanged, and a government deficit can grow out of decreased revenues quite as much as out of increased expenditures. The main reason why government revenues are today likely to decline more rapidly than income is our increasing reliance on progressive income taxes, which by definition increase or decrease more than in proportion to income. But, in addition, we rely heavily on taxation of corporate profits. Though the tax involved has rates that are mainly proportional, the revenues it yields fluctuate sharply because profits themselves fluctuate more than does income as a whole. Overall, although the federal government has always tended to run deficits when income declined, it is clear that the relative size of deficits likely to develop *automatically* under present arrangements is far larger than ever before. Collectively these arrangements have been characterized as involving "automatic stabilizers," for they work to stabilize the economy without anyone having to make a decision to put them into effect.

Finally, as already noted, a collapse of the banking system comparable to what occurred after September, 1931, is most unlikely, both because of the establishment of the Federal Deposit Insurance Corporation and because of changes in the Federal Reserve System which give the System more power over banks as well as reduce the restrictions to which the System itself is subject.

### Other Favorable Developments

In addition to automatic stabilizers and improvements in the banking system, far greater agreement prevails than before as to what should be done to prevent fluctuations. It is today inconceivable that anyone would, as Roosevelt did, campaign at the bottom of the worst depression in history in favor of a balanced federal budget. In fact, it is practically certain that any administration, regardless of its political complexion, will move to offset a serious future slump, and quite likely will move aggressively. The absence of divided counsel on anything except how forcefully the government should react is a positive development of major importance.

Other currently favorable influences, not all of which are necessarily permanent, include the present rapid rate of population growth. It is, for example, estimated that households will rise from 52 million in 1960 to 58 million in 1965 and 64 million in 1970—or by almost 25 percent in a decade. Newly formed households enter the market with the same sort of urgent demand for all sorts of goods that is brought about by a prolonged war. Hence, despite the reservations that one may have regarding its ultimate impact on the quality of life, rapid and continued population growth is likely to be an antidepression factor of major importance.

Continued growth is likely to be especially important in connection with housing construction. Recall that after World War I housing construction expanded steadily until 1925 and contracted steadily thereafter; undoubtedly one factor in the decline was the slowing down during the twenties in the rate of population growth. As we have noted, since World War II the behavior of housing has been quite different. Not only has the result been stabilizing in the short run; it has probably had the overall effect of retarding the working off of the backlog of housing demand accumulated during World War II. When to these developments is added the rapid increase in family formation that will take place in the sixties, it is quite possible that housing construction will no longer fluctuate in so pronounced a fashion as in the past. In any event, it seems practically certain that the timing of any remaining tendency toward fluctuation will be significantly different from the previous sixteen-year fluctuations. The developments just summarized, taken together, make a serious depression very much less likely than it was in 1929.

### Unfavorable Developments

But there have also been unfavorable developments. One is the simple fact that the Great Depression occurred. Up to 1929 no responsible economist believed that employment could decline by one quarter. That it can is now a fact of business history; if a major contraction ever gets under way, both the speed and the size of the drop will be affected by our having experienced the Great Depression.

Undoubtedly more important is the increasing ease with which expenditures can be postponed, thanks to the increasing durability of producer and consumer goods as well as to our higher level of living. Starting with consumption, the percentage spent on goods with an expected life of more than, say, a year is higher than ever before, which in turn means that the percentage of expenditure that can be put off with little or no *immediate* loss of satisfaction is greater than ever before. Our increasingly high level of living has a similar effect, in the sense that hamburger can alleviate hunger quite as well as does steak. Rigid distinctions are hardly possible, but where durable goods are important, where the level of living is high, and especially where it has been rising rapidly so that the higher level has not yet become customary—all situations applying to the United States—postponing consumption expenditure is likely to be relatively easy, and business fluctuations as a result are likely to be relatively severe.

The situation in regard to producer durables and business construction is more complicated. There is no clear evidence of any increase in the durability of capital, so that in this regard the economy may not have become noticeably more vulnerable. But since World War II gross private investment has been declining in relative importance—from 17.5 percent of the GNP in 1950 to 14.5 percent in 1960. Recall, moreover, that depreciation allowable for tax purposes—which determines the provision for depreciation most businesses make—is based on the *original cost* of the capital involved. As a result, the sharp increase in prices immediately after the war made the depreciation that business set aside inadequate to replace existing capital at postwar prices. Under such circumstances considerable net investment is required merely to *maintain* the existing stock of capital, so that the economy has to save merely to preserve its capital much as the Red Queen had to run to stay where she was.

What is involved can best be illustrated by the behavior of depreciation allowances. In 1946, permitted allowances, based mainly on the prewar cost of capital equipment, fell to 5 percent of the GNP. But thereafter, as business both replaced its capital at the higher postwar price level and added to its capital stock, permitted allowances have risen steadily, reaching 8.6 percent of the GNP in 1960, a level slightly higher than that prevailing in 1929. The existence of such large depreciation allowances in an economy adds a considerable element of instability. In addition, now that depreciation allowances have increased to the point where they provide well over half of all the funds needed to replace existing capital, the outlet for saving that was previously provided by the investment undertaken merely to *preserve* existing capital has declined proportionately. As a result, even in the absence of an increase in the propensity to save, the provision of investment outlets sufficient to absorb available saving is likely to become increasingly difficult.

Finally, there is no evidence of any general increase in the willingness of businessmen to "regularize" their investment programs. Because business construction, once started, is hard to stop before completion, it is true that construction did not fall particularly drastically in 1958. But future projections of capital formation, based on surveys of businessmen's intentions, showed sharp declines at that time. The emphasis of Keynes on the volatility of investment still appears justified.

### The Balance between Favorable and Unfavorable Developments

Let us try to strike a balance between favorable and unfavorable developments. One thing needs to be stressed: the favorable developments that have been mentioned tend generally to mitigate, but not to prevent, fluctuations. Unemployment benefits, agricultural aid, or progressive taxation, for example, offers no assurance that incomes will not decline; all they do is offset a *part of an actual decline*. Even the improvement of the banking system is, in practice, likely to be no more than mitigating, for banking difficulties after 1929 did not become severe until most of the overall decline had occurred. What the favorable developments provide, therefore, is a very real assurance that a depression of the 1929 *magnitude* is unlikely. This means that in the future we are unlikely ever again to have 16 million unemployed. Can we be equally sure that we will never have 7 or 8 million?

Specifically, could a series of unfavorable developments conceivably plunge the economy into a depression? For example, three main factors were responsible in 1958 for the recovery: the expansion of federal spending mainly as a result of Sputnik, the recovery of housing, and the relative stability of consumption. Suppose, instead of these developments, that government spending had continued to decline in culmination of a hard-fought campaign for economy in government, coupled with a Russian peace offensive; that housing had reacted rather drastically from a high level of construction and high interest rates (perhaps caused by efforts to use monetary restraint to curb inflation); and that consumers had become disenchanted with many things besides cars. If other areas of the economy had remained as unfavorable as they were in 1958, the possibility that under such circumstances a serious slump might have developed appears quite real—certainly real enough to justify our considering with some care the sort of preparations that would be desirable to enable us to deal with a serious slump.

### Conscious Action versus Automatic Stabilizers

Though the importance of our increased agreement in regard to what needs to be done to combat a serious depression was mentioned, in the discussion of favorable and unfavorable developments in the economy since 1929, main stress was placed on changes that can be counted on to stabilize the economy *automatically*—as, for example, the increasing reliance by the federal government on the progressive income tax. The remainder of the chapter will be primarily concerned with the measures that might be taken as part of a *conscious program* to combat a potentially serious slump—the program, of course, being made possible by our increased agreement in regard to what needs to be done. There is no doubt that much of the optimism of those who are convinced we shall be able to avoid a serious depression stems, not so much from the increased availability of automatic stabilizers as from the belief that a depression can be prevented by the *conscious use of fiscal policy*. This means that, in a recession or a depression, the federal government will deliberately decrease taxes and increase spending, thereby creating a current deficit hopefully large enough to offset the current surpluses of consumers and business. A major goal that Keynes sought to achieve by publishing the *General Theory* was widespread acceptance by governments and the public of the appropriateness of this sort of response to a business decline; those who are optimistic believe, in effect, that the Keynesian lesson has been learned.

At the present time reliance would in practice have to be placed mainly on tax cuts if a large deficit were required. The overwhelming portion of current federal spending, including defense expenditures and interest payments on the national debt, is spending that we presumably would not want to increase merely because the economy was in a recession. Moreover, even in the areas where increases might be desirable, no systematic preparations have been made to achieve additional expenditures. The probability of a serious future depression, therefore, depends largely on the extent to which we can expect to check a serious decline with a hastily improvised program of tax cuts, coupled with an equally hastily improvised program of increased spending in a limited number of areas.

It may well be that improvised programs can be counted on to achieve their purpose and are, therefore, all the situation requires. If we could be certain this was so, the discussion that follows would not be needed—though it might in any event improve the effectiveness of our improvisations! But there is a real danger that improvisations will prove to be inadequate. Yet nothing less than our leadership of the free world depends on our ability to prevent the development of serious unemployment. Hence careful consideration of measures designed to deal with a severe decline seems worth while even though they may quite possibly never be needed—just as a fire department works out arrangements to deal with a conflagration even if it thinks the chances of one breaking out are highly remote.

### Monetary Policy

Conscious measures to prevent a depression fall into two categories: monetary and fiscal. Though the Treasury and the Congress have ultimate power to influence the quantity of money, in practice, as we have seen, monetary measures today depend on use of the powers of the Federal Reserve System. Appropriate monetary policy to deal with a *recession* is complicated by the possibility that a too liberal policy during the recession will intensify inflationary pressures in the subsequent prosperity. But, as we are here concerned with preventing a *serious depression,* we may treat this danger as remote; inflationary pressures at such a time are unlikely. There is, therefore, likely to be general agreement on the desirability of the Federal Reserve System's using its powers to increase the quantity of money and thereby create a condition of monetary ease to offset, as far as possible, the decline in the flow of spending. Moreover, as already noted, the Federal Reserve System today can probably control the quantity of money in the sense that it has sufficient power to offset any *likely* changes in the other factors influencing the quantity of money. In the discussion that follows, therefore, we shall simply assume that the Reserve System has created appropriate monetary ease.

### Fiscal Policy

During the twenties much of the optimism regarding the continuance of prosperity stemmed from the belief that appropriate monetary policy would be able to eliminate economic fluctuations. What became clear during the Great Depression is that mere availability of funds is unlikely to be adequate *by itself* if the slump is serious. For there is nothing that the monetary authorities can do to prevent newly created money from being held idle, and, therefore, not in any way offsetting the decline in the flow of spending. The essence of fiscal policy involves the government's borrowing idle or newly created money and putting it to use by spending in excess of its revenues—in short, running a deficit. In terms of the quantity equation, monetary policy acts mainly on $M$ while fiscal policy acts mainly on $v$.

A fiscal program to stabilize the economy would be easy to devise if consumer and business spending were unaffected by what the government did. Some of the first efforts to apply the Keynesian approach—as, for example, the 1945 version of the unemployment act creating the Council of Economic Advisers—proceeded as if no repercussions were to be expected. The original draft simply proposed that the council estimate the amount of employment likely to be provided by business and consumer spending and that the government then undertake such additional spending as appeared necessary to provide full employment. But unfortunately the rest of the economy is affected by what the government does. To take an extreme example, every dollar spent by the Tennessee Valley Authority in the first year or two of its existence may well have induced a tenfold contraction in spending by private utilities fearful of expanding their capacity in the face of government competition. Even in less extreme circumstances repercussions on private spending may either seriously limit the impact of the government's efforts to stabilize the economy or even make them substantially ineffective.

What has just been said suggests in effect that as much as possible of the burden of stabilizing spending should be placed on business and consumers, and that only to the extent that these fail in their duty—and then with reluctance—should the government undertake to make up for the inadequacy of the other sectors. This point may perhaps appear small. But the acceptability of government efforts at stabilization is likely to be far greater—and adverse repercussions on other areas far smaller—if the government's program is undertaken with clear regret and only because business and consumers have failed to set their own house in order, rather than with relish and as a happy chance to increase the government's control over the economy. This matter is, in fact, so important that we shall return to it in outlining a stabilization program for business.

Second, the unknown is always frightening. A program which is known and anticipated is likely to have fewer adverse effects—even on those who object to it—than one improvised at the last moment. With these requirements in mind, let us outline stabilization programs for consumers, business, and, finally, government.

### A Stabilization Program for Consumers

Unemployment insurance may be thought of as involving either consumers or government; the classification is not important. What is important is the establishment of systematic arrangements to extend the period, and perhaps to increase the level, of benefits when unemployment is widespread. The case for benefits relatively low in amount and limited in time is that the individual should have an incentive to find a new job—perhaps even one in a different location or another trade. But when people are unemployed in all trades and all locations, the argument loses its validity.

There appears to be widespread agreement on this point; in fact, the one deliberate increase in spending by the federal government to aid recovery during the 1958 decline took the form of federal assistance to those whose right to unemployment benefits, which then typically continued for no more than six months, had expired. Changes in the social security program to make this sort of assistance permanent were approved early in 1961, but the scope of the assistance is still relatively limited. Preparations for the federal government to accept an obligation when the level of unemployment is high, to provide continuing assistance to those whose benefits have expired, and conceivably even to supplement existing benefits, would contribute greatly to the stabilization of consumer spending.

Beyond this it will not be easy to go. At present the behavior of consumer credit probably serves to intensify the cycle: expanding during prosperity and contracting during recession. More control over consumer credit by the Federal Reserve System might be helpful, especially if restrictions operated in the way that limitations on the interest that may be paid on government-guaranteed residential mortgages have operated—reducing the supply of funds sharply when interest rates rise during prosperity and increasing them rapidly as interest rates fall during recession. But it is doubtful whether, on a quantitative basis, much can be achieved. It remains overwhelmingly important to provide consumers with the assurance that loss of employment during recessions will not lead to major reductions in their receipts.

### A Stabilization Program for Business

The range over which the corner grocer is in a position to stabilize his investment program is small; the range over which American Telephone and Telegraph is in a position to do so is immense. The firms responsible for the bulk of business investment probably come closer to resembling A T & T than the corner grocer. It is, therefore, certainly within the *power* of business to go far toward stabilizing its investment expenditures. Large-scale industry, moreover, appears increasingly to recognize the importance of maximizing long-run rather than short-run profits. Stabilization, as a result, might well be possible even if it were clear that short-run profits would be reduced; but it is by no means certain that stabilization necessarily involves a sacrifice of profits, for many benefits are to be gained from not interrupting a continuing investment program.

In actual practice, however, business investment was maintained during the 1958 recession only by the need to complete projects that were in process; planned programs were cut back severely. Even A T & T was involved. For this economists and the Council of Economic Advisers appear to share some of the blame. Economists contributed, under the influence of Keynes, by treating investment as if it were rigidly determined by the rate of interest and the "marginal efficiency of capital"—and, therefore, presumably independent of policy considerations. But the "marginal efficiency" in reality depends on a businessman's guess as to the return he can *expect* to receive over the lifetime of a capital asset; anything so nebulous clearly means that investment is not entirely determined mechanically.

The Council of Economic Advisers has contributed because it has made little effort to educate businessmen both as to the importance of maintaining their investment expenditures and the inevitability of large offsetting government deficits if they do not do so. Today businessmen are generally reluctant to announce price increases; there was no comparable reluctance to announce curtailment of investment programs in 1958.

Is something more than a program of educating businessmen needed? The answer depends on the probability of a severe fluctuation. In my judgment the probability is sufficiently great to justify careful exploration of the ways in which government could encourage business to stabilize its investment spending. For example, after unemployment reaches a specified level or at the discretion of the Council of Economic Advisers, business might be allowed to accelerate the depreciation of all subsequent investment. Alternatively business might be allowed very rapid depreciation of investment in excess of some base such as current depreciation, the average level of investment over the preceding five years, or some similar formula. Changes along these lines were proposed by President Kennedy early in 1961. Administrative difficulties will doubtless be involved, so that careful advance planning appears essential if maximum effectiveness is to be achieved. But development of measures of this sort appears desirable because of the quite strong probability that they will make a larger contribution to the stabilization of business investment and involve a smaller expansion of government activity than any other possible alternative.

### A Stabilization Program for Government

As already pointed out, if improvised reductions in tax rates can be counted on to stabilize the economy, government stabilization programs present no difficulties. We have, unfortunately, no experience with the impact of large-scale tax cuts. They may possibly be quite effective, but a large portion of the funds freed by tax reductions may conceivably be hoarded in anticipation of the future reimposition of the taxes involved, making the immediate impact of a reduction quite small. Much depends on whether the reduction is in current withholding or in the obligation to pay taxes at some future time. Probably delegating to the Council of Economic Advisers the power to vary (within appropriate limits) the basic withholding rate would be most effective; there is as yet no evidence that the Congress is willing to delegate so vital a matter even to the President.

It is, moreover, possible that, if the federal budget is deliberately unbalanced by tax cuts, the adverse repercussions on private spending may be considerable. Many besides Dickens' Micawber are convinced that, when income is 20 pounds, the expenditure of 20 pounds and 6 pence can only lead to MISERY! It is not difficult to show that there is little objective validity to such fears. In 1946 the federal debt was one and a half times the national income; today it is only a little more than two thirds of the national income. It would take a $20 billion deficit continuing for almost seventeen years to re-establish the 1946 ratio even if there were *no interim increases in income.* But it is one thing to make the theoretical case for deficits and quite another to develop public confidence in large deficits achieved by deliberate tax reductions. This is again an area where the educational work of the Council of Economic Advisers appears to have left much still to be done.

Deficits produced by tax reductions can be enlarged by expansions of government spending. But improvised spending programs may once again be unsettling; certainly the projects of the New Deal which came to be characterized as "leaf raking" had obvious adverse repercussions on business confidence. On the other hand, there is no aspect of government stabilization efforts that is easier to defend than the provision of desired public works—schools, roads, parks—earlier than they would otherwise have been available through the use of workers who would otherwise have been idle. In such circumstances one clearly gets something for nothing—or, more precisely, something for a labor cost amounting to no more than the difference between going wages and going unemployment benefits. Not to be in a position to expand government spending as a part of a stabilization program seems a quite unnecessary risk in view of the uncertainty regarding the effectiveness of other measures.

The difficulty is that maintenance of employment, to the extent that it is accepted as a governmental obligation, is accepted as a federal obligation. But any balanced program of expanded expenditures would have to involve state and local governments, which have as yet shown little interest in helping to eliminate fluctuations. In short, this again is an area where planned programs may well be both desirable and effective, but where improvisation at the last moment is likely to lead to no more than the modern equivalent of leaf raking.

# 51 The Problem of Inflation

## Introduction

The fall of France in 1940 has been attributed to the fact that the French General Staff was well equipped to deal with a war of the 1914 variety but was quite unprepared to cope with modern mechanized and mobile warfare. In much the same way economists at the end of World War II, as a result of the "Keynesian Revolution," were well equipped to deal with deflation and unemployment but were quite unprepared to cope with the persistent inflation that has marked the postwar period. Inflation was not generally anticipated; rather, it was widely believed by both economists and businessmen that, after a short postwar boom, deflation and unemployment would again become the paramount problem. In fact, the promise of the British Labour party to prevent a return to the unemployment of the thirties was perhaps the most important factor in its victory in 1945. Yet actually during the entire time that party was in power inflation persisted and unemployment never amounted to as much as 1 percent of the labor force!

By 1960 the increase in prices had reached a level more than double that prevailing in the prewar period and, more significantly, two thirds higher than the level of 1945. Why there has been such a large and continuing rise in prices is the topic with which this chapter is concerned.

## Arguments Regarding the Cause of Price Increases

The subject matter of this chapter is controversial. For whether wage increases are responsible for price increases or price increases responsible for wage increases has been vehemently debated in recent years. Actually it is no more possible to choose between the two than to say which came first—the hen or the egg; and the debate is about as sensible. To illustrate, suppose there is no increase in productivity or in the labor force and that prices and wages each increase 3 percent annually, so that the share of the national income going to wages in any year remains unchanged. Suppose, further, all wages increased on January 1 and all prices on July 1. Put in this basic form, few would want to waste time debating whether the July 1 increase in prices "caused" the subsequent January 1 increase in wages or the preceding January 1 increase in wages "caused" the July 1 increase in prices. What keeps the debate going are the complications introduced by increases in productivity and the possibility of redistribution of income between labor and other productive factors. Let us examine each of these in turn.

### Productivity and Price Increases

Recall that productivity is simply output divided by input. We have good measures of "output," as it is the same thing as real national income—in other words, money income adjusted for price changes. On the "input" side, employment and even total man-hours of work are relatively easy to measure, but the "input" of capital and land is much more difficult to determine. As labor accounts for perhaps 80 percent of total "input," however, productivity can for many purposes be satisfactorily measured by real income per worker, the measure used in the discussion to follow.

Let us recall certain identities. "Factor payments"—payments to the land, labor, and capital responsible for any given production—are the same thing as "input payments" for such production; we shall use the former term because it is in more general use. Next, the value of output is equal to the factor payments made for the production of such output (including, of course, the profits of entrepreneurs). If then, in the base year, output is 100 units each worth $1, the value of output, the national income, and factor payments will all be equal to $100. Now suppose that productivity (output divided by input) increases by 3 percent annually but that the quantity of the productive factors (in other words, input) is constant. In these circumstances two alternatives are possible. National income and factor payments may remain unchanged at $100, with the annual 3 percent increase in output being sold because each year prices fall by a trifle less than 3 percent. Or alternatively prices may be unchanged, with the value of output, national income, and factor payments each increasing by 3 percent.

But suppose *total* factor payments increase by *more* than 3 percent. *Then prices must rise.* Recall that factor payments are equal to the value of output. It follows that if total factor payments increase by more than 3 percent, the value of output must also be increasing by more than 3 percent. But it is possible for the value of output to increase faster than the quantity of output (assumed to increase at no more than 3 percent) only when prices are rising. If we put this same point the other way around, we will have a conclusion of major importance: *If prices are not to increase, total factor payments cannot increase faster than the increase in productivity.* The significance of this statement is hard to exaggerate.

### The Limits on Redistribution

But cannot payments to a single factor increase faster than the increase in productivity by decreasing the share going to other factors? Specifically, cannot wages increase faster than the increase in productivity without increasing prices if profits are reduced? The answer is definitely yes; but the amount involved, as we have already seen in connection with possible changes in income distribution, is quite small. Frequently this point is obscured because the *direct labor payments* of a particular company are compared with its *gross profits* before provision for depreciation. On this basis it is quite possible to find that labor payments are no more than 40 percent and profits as much as 20 percent of gross receipts—from which it appears that a 10 percent increase in wages would be possible with no more than a 20 percent reduction in profits. The main reason why direct labor payments are often small is that in our highly specialized economy much, and frequently most, labor is bought indirectly after it has been embodied in the materials and supplies that an individual company buys from other companies. Hence, unless one company's labor is to benefit at the expense of labor elsewhere, it is necessary to look at total labor payments, which are given us by our national income accounts. And, if capital is to be maintained, it is essential to compare wages with the national income after allowance for depreciation rather than with the gross national product before depreciation has been provided for.

### Redistribution and Prices

How much redistribution is possible? Chapter 18 pointed out that in 1960 the complete abolition of corporate profits would have permitted a 14 percent increase in total labor income. This makes no allowance for the fact that most corporate profits are today used to pay taxes or are reinvested in the corporation. Actually the consumption of corporate owners out of the profits they receive is so small that, if it were entirely redistributed to labor, it would increase labor's consumption by only about 3.5 percent. In short, if we are concerned with redistribution of the present benefit represented by consumption rather than redistribution of the obligation to pay taxes or save for the future, the limitations as to what can be achieved by redistribution are clearly severe at the present time.

Let us apply these results to the question of the extent to which wages can increase faster than prices at the expense of profits. The case previously discussed assumed a 3 percent increase in productivity and no change in inputs of land, labor, and capital. Labor income could increase 5 percent annually for three and a half years without any increase in prices, provided profits are cut in half—3 percent of the 5 percent increase coming from the increase in productivity and the remaining 2 percent from a redistribution of that amount each year from profits to wages. *But* half of the 7 percent gain from redistribution over the three-and-a-half-year period will have to be taken by tax increases if government deficits are to be avoided and a further quarter if saving for future growth is not to be reduced. Hence the *net benefit* of a profits squeeze sufficient to cut profits in half over a four-year period would be an increase in the consumption of labor of *less than 2 percent.* Such a squeeze, moreover, would be possible only once, in the sense that, if it were repeated, it would eliminate all current benefit from owning corporations and thus bring an end to our system of free enterprise. Yet the increase involved is less than the average *annual* increase in productivity per man-hour in many periods. In fact, it is little more than the difference between the 3.2 percent rate of increase in productivity that appears to have been realized in the early fifties, and the 1.7 percent rate that appears to have applied since then.

It follows that, even if profits *could* be squeezed by a faster rise in wages than prices, the current benefits would be quite small. But, in the absence of legal restraints on price increases, there is no reason to believe that it is in fact possible to squeeze profits in this way. In the early postwar period, when wages rose very rapidly, profits rose even more rapidly, so that profits *gained* at the expense of labor. The peak was reached in 1950, when the sharp increase in spending induced by the Korean War caused profit margins to expand to the point at which the increase in labor income that would have resulted from the elimination of profits reached 23 percent (compared with 14 percent in 1960).

Since then, despite the fact that wage increases have been relatively far less rapid, profit margins have steadily shrunk. The main factor responsible for the shrinkage appears to have been the increase in competition that has resulted from the sharp expansion of capacity caused by the high postwar level of investment. It seems fair to conclude that, at the very least, there is no proof that wages can be pushed up faster than prices so as to squeeze profits. But, even if it were possible, the severely limited quantitative importance of the resulting redistribution needs to be stressed once again. It follows that, if prices are not to increase, *payments to any factor as important as labor cannot increase faster than the increase in productivity by much or for long.*

### What Actually Happened

Thus far the discussion has been rather theoretical. Let us make it concrete by looking at what actually happened between 1947 and 1960. Over the thirteen-year period the GNP, adjusted for price changes, increased 56 percent; this, of course, represents the rise in our broadest measure of the production of goods and services in the economy. Over the same period civilian employment increased by 15 percent. Dividing one into the other, it follows that productivity per worker increased by 36 percent—or 2.7 percent a year. As already noted, this is not a complete measure of the increase in productivity, for it makes no allowance for increases in the input of capital and natural resources or changes in hours of work, but it provides an adequate measure for present purposes of the extent to which total factor payments could have increased without a rise in prices.

By how much did total factor payments actually increase? Let us use as our measure the increase in GNP per civilian worker. In 1947 it was just over $4,000 and in 1960 just over $7,500, so that the increase over the period was 87 percent. If we divide the 87 percent increase in GNP per worker by the 36 percent increase in productivity, we shall get a measure of how much more rapidly incomes increased than was justified by the increase in productivity: the result is 38 percent. It follows that, if we want the GNP per civilian employee to increase as rapidly as it has since 1947 with the rate of productivity unchanged, we must expect an average price increase (disregarding compounding) of perhaps 3 percent per year.

### Inevitability of the Postwar Inflation

To a significant extent the postwar inflation was made inevitable by the way in which we financed the war. Between 1942 and 1946 our money supply more than doubled, but the increase in national income was only a little more than 30 percent.[1] As a result, income velocity declined drastically from about 2.5 in 1942 to perhaps 1.5, making the income version of the quantity equation for 1946 approximately as follows:

$$\begin{aligned} M \times v \quad &= NI \\ 120 \times 1.5 &= 180 \end{aligned}$$

The reason that velocity had by 1946 fallen to so low a level was, of course, the existence of price controls. When output is at a maximum (as indicated by minimum unemployment) and prices are controlled, then it is *pO* that will determine the flow of spending. One way of describing what is involved is to say that "bare-shelf rationing" is occurring—that there was nothing left to buy at legal prices before people spent their entire income, forcing them to carry unspent balances into the following period. But if *pO* cannot increase, then a major expansion in money must inevitably be accompanied by a sharp decline in velocity.

Velocity at 1.5 in 1946 contrasts with 2 in 1933 and over 3 in 1929. As soon as price controls ended, therefore, a substantial rise in velocity was to be anticipated. But output after 1946 was capable of only slow expansion in line with increases in productivity and growth of the labor force. The immediate increase in the labor force that resulted from the demobilization of the armed forces was offset by the withdrawal from the labor force of women and older men and a sharp reduction in hours worked. A sharp expansion of $v$, when $O$ is expanding slowly, however, makes a rapid rise in $p$ inevitable, even if $M$ is constant, as the following equation demonstrates (using the bar to indicate constancy and the arrows to show the size of movement):

$$\bar{M} \times \overset{\uparrow}{v} = \overset{\uparrow}{p} \times \overset{\scriptscriptstyle\uparrow}{O}$$

### Means of Preventing a Postwar Inflation

Is there any way the rise in prices could have been prevented? There are two possibilities: eliminating the excess money or continuing price controls. Had it been possible to reduce $M$ by \$30 billion in 1946, $v$ could have increased to 2 without increasing $Mv$; had a reduction of \$48 billion been possible, a rise to 2.5 would not have increased spending, as the following equations show:

---

[1] The 1946 total of \$120 billion probably somewhat exaggerates the increase in the quantity of money, as the total declined to \$110 billion in 1947. But refinements are unlikely to affect the broad conclusions with which we are concerned.

$$
\begin{aligned}
M \times v &= NI \\
90 \times 2 &= 180 \\
72 \times 2.5 &= 180
\end{aligned}
$$

The Soviet Union and certain European countries actually did reduce the quantity of money after the war by forcing people to exchange, for example, $2 of old money for $1 of new money. But although this is a possible solution, it is in all probability about as inequitable in its impact as the inflation it is designed to prevent and is quite unlikely to be used in a democracy unless there are other objectives involved, such as confiscation of profits earned during an enemy occupation.

What about continuing price control until the normal growth of productivity and the labor force permit an expansion of $O$ sufficient to permit $v$ to return to a more normal level without an increase in $p$? The difficulty is that the longer price controls continue, the more inequitable and disruptive they become—quite apart from the possibility that the enforcement of price controls in peacetime may prove impossible. Most price ceilings were in practice established with reference to a base period and therefore reflected the previous workings of a market economy. The longer market influences are prevented from working, the greater the probable inefficiency with which available resources will be used.

To illustrate how long price controls would have been necessary to absorb the monetary surplus, recall that the real GNP (due to the increase in both employment and productivity) was 56 percent higher in 1960 than in 1947 (the first relatively normal postwar year). Hence the 1947 national income of $198 billion would have grown to $309 billion in 1960 without an increase in prices. But by 1960 velocity had increased to around 2.90, its highest level since the Great Depression. In 1947 the money supply fell to $110 billion, the lowest level in the postwar period. Suppose that there had been no subsequent increase; then the increase in velocity alone would have caused the quantity equation in 1960 to be as follows:

$$
\begin{aligned}
M \times v &= NI \\
110 \times 2.9 &= 319
\end{aligned}
$$

But this means that prices would have been 3 percent higher in 1960 (giving a national income of $319 billion rather than $309 billion) *even if there had been no increase whatsoever in the money supply between 1947 and 1960.* Put the other way round, even if we assume that velocity would not in any event have risen above 2.9 in 1960, it still would have been necessary for the money supply to have decreased by several billion between 1947 and 1960 to have held the increase in income to $309 billion and thereby prevented price increases.

In reality, the money supply *increased* by almost $35 billion over the period, or by more than 30 percent. Recall once more that in the same period production increased by more than 50 percent. It is certainly possible that the increase in the money supply might have been somewhat less if a different monetary policy had been pursued, but it seems unlikely that a decrease in the money supply would have been feasible during a period in which output increased by more than one half. It follows that, even if it had been feasible to continue controls for more than a decade after the end of the war, a postwar inflation would inevitably have resulted from the way in which we financed the war.

### The Maximum Level of Velocity

But the monetary ease inherited from the war appears by now to have been substantially eliminated. Cannot monetary controls now be used to prevent price increases in the future? Chapter 46 pointed out that monetary policy can effectively control the flow of spending only if prevailing payment practices set an upper limit on the increase in velocity. Historically velocity appears to have shown a long-run tendency to decline. But one study has estimated that income velocity (with one exception) varied by less than 10 percent above or below an average value of 3 from 1909 to 1929 despite the fact that over the twenty-year period the quantity of money and national income both increased threefold.[2] In the thirty-one years since 1929, money has increased just under 5.5 times and income just over 5 times—and income velocity at 2.9 is again within less than 5 percent of 3! Actually it is possible that service charges and requirements regarding minimum balances may have lowered the maximum presently possible without major disturbance of current payment practices. Although the matter is not one on which a precise answer can be given, an increase from the 1960 level by as much as 10 percent would, in my judgment, result in income recipients operating with uncomfortably small balances. Although 10 percent is not an insignificant amount, to simplify let us disregard possible increases and treat velocity as having reached the highest level permitted by prevailing payment practices; this in turn means that the upper limit of the flow of spending, given our assumption, depends directly on the quantity of money.

[2] James W. Angell, *The Behavior of Money* (New York: McGraw-Hill Book Company, 1936), p. 190.

### The Flow of Spending, Prices, and Output

But we have suggested that the quantity of money can in turn be controlled by the Federal Reserve System. If this is so, it follows that the Reserve System can set an upper limit to the flow of spending. Why cannot its powers be used to prevent price increases? Specifically, using bars to indicate constancy and the direction of arrows to indicate the direction of variation, would not the following be possible:

$$\bar{M}\bar{v} = \bar{p}\bar{O}$$

in which a constant money supply and the maximum possible level of velocity kept prices from rising for what we may treat, to simplify the presentation, as a constant quantity of production? The basic difficulty is simply that the following outcome is also possible:

$$\bar{M}\bar{v} = \overset{\uparrow}{p}\overset{\downarrow}{O}$$

in which a continuing rise in prices is made possible by a proportionate decline in production. Suppose, for example, that 100 units are sold at \$1.00 so that the flow of spending is \$100. Suppose further that (still disregarding changes in the level of production) all the factors of production were to insist on a 25 percent increase in their compensation, requiring prices to increase to \$1.25. Then, if the flow of spending remained \$100, output would fall to 80 units.

### Cost Push versus Demand Pull

During the postwar period there has been a vigorous debate as to whether the postwar inflation has been caused by a "cost push"—upward pressure on prices as a result of higher factor compensation; or a "demand pull"—upward pressure resulting from more money chasing goods relative to the goods being offered for money. The stress that has already been placed on the inevitability of a postwar inflation suggests in effect that *thus far* demand pull has clearly been a factor in the situation. What the analysis just completed permits us to examine is whether a cost push can be expected to cause price increases if demand pull in the sense of an increase in the flow of spending is absent. If there is any meaningful aspect of the argument as to whether wages or prices are responsible for inflation, it is in connection with the possibility of a continuing cost push.

The two alternatives just outlined present two extreme possibilities—

one involving the complete absence of a cost push with output and prices constant, and the other involving a clear cost push with output declining in proportion to the increase in prices. Obviously neither extreme is particularly likely. The real problem is to compare the extent to which a cost push is likely to be dampened by monetary restraint with the probable repercussions on output—and especially on the growth of output—that such restraint is likely to entail. Any attempt to make such a comparison, in the present state of economics, is risky. We shall nonetheless try to throw light on the matter, first, by examining the probable impact of monetary restraint on the cost push. Then, in the following chapter, we shall consider the extent to which monetary restraint is likely to lead to a reduction in output and employment. Let us start by examining the actual behavior of money wages, which are obviously the most important element in the cost push, confining our attention to manufacturing industry on which excellent information is available.

### The Postwar Behavior of Hourly Earnings

The postwar behavior of average hourly earnings of production workers in manufacturing industries is summarized in Table 51-1. Over the fifteen-year period as a whole the increase in hourly earnings averaged 8.5 cents a year. But although the absolute rate of increase in earnings has remained relatively stable, amounting to 9 cents on the average in the first five years after the war and 8 cents in each subsequent five-year period, the percentage rate of increase has steadily declined from 8 percent in the first period to 5 percent in the second and 4 percent in the most recent period.

### Productivity in the Economy versus Productivity in an Industry

By how much can wages rise without putting pressure on prices? This question cannot be answered until we decide how productivity gains are to be shared. Without denying that the morale of workers has an influence on productivity, it is clear that a great many other things, and in most cases more important things, are involved. The increase in productivity that goes with the development of a new product such as nylon or a new technology such as the gas turbine can hardly be attributed to the workers in the industries in question. Because the introduction of new products and techniques requires the cooperation of the workers concerned and because some of the workers may, for a time, be adversely affected, a good case can be made for relatively higher earnings in progressive industries, which is, in fact, what generally prevails. But there seems no reason whatsoever for a particular industry that is progressing

TABLE 51-1

Earnings of Production Workers in Manufacturing Industries

(In dollars per hour or percentages)

| | | | | Five-Year Average [a] | |
|---|---|---|---|---|---|
| Year | Amount | Actual Increase | Percentage Increase | Actual Increase | Percentage Increase |
| 1945 | 1.02 | — | — | — | — |
| 1946 | 1.09 | .07 | 7 | | |
| 1947 | 1.24 | .15 | 14 | | |
| 1948 | 1.35 | .11 | 9 | | |
| 1949 | 1.40 | .05 | 4 | | |
| 1950 | 1.47 | .07 | 5 | .09 | 8 |
| 1951 | 1.59 | .12 | 8 | | |
| 1952 | 1.67 | .08 | 5 | | |
| 1953 | 1.77 | .10 | 6 | | |
| 1954 | 1.81 | .04 | 2 | | |
| 1955 | 1.88 | .07 | 4 | .08 | 5 |
| 1956 | 1.98 | .10 | 5 | | |
| 1957 | 2.07 | .09 | 5 | | |
| 1958 | 2.12 | .05 | 2 | | |
| 1959 | 2.23 | .11 | 5 | | |
| 1960 | 2.29 | .06 | 3 | .08 | 4 |

[a] Average of annual increases.
SOURCE: Bureau of Labor Statistics.

rapidly to retain all or even any major part of its productivity gains. For, if it were to do so, the wages of the workers involved would move completely out of line with those of comparable workers elsewhere in the economy. Keep in mind that increases in productivity are not uniform; in fact, there may even be areas, such as teaching, where progress should be measured by *decreases* in at least crude measures of productivity. What in general appears desirable, therefore, is for the average increase in productivity in the entire economy to determine the justifiable increase in earnings in a particular industry rather than its own individual rate of productivity increase. Specifically, if productivity per worker in the overall economy is increasing at 2 percent at a time when it is increasing at 10 percent in manufacturing and not at all in teaching, it seems desirable that both earnings of teachers and of manufacturing workers should, as a first approximation, increase by 2 percent.

What complicates the matter is the need to redistribute workers as productivity changes. If the demand for the products of an area with rapidly increasing productivity is income-inelastic—so that sales increase less rapidly than income increases—then rapid improvements may be accompanied by sharp *declines* both in the number of workers employed and in their relative living levels. This is exactly what has happened in agriculture, where productivity has recently been increasing very rapidly, causing both employment and total income to fall. Although the number of workers declined more rapidly than income, the resulting rise in income per worker was only from a little over $2,300 in 1947 to about $3,000 in 1960, or by less than 30 percent over the period compared with 87 percent in the economy as a whole. As a result, income per worker declined from 58 percent to 40 percent of the national average. It is clear that rapidly increasing supplies in the face of an inelastic demand can be expected to lead to a drastic decline in prices and incomes. Although, ultimately at least, the decline can be expected to bring about the transfer of resources that the consumer indicates he wants by the income-inelasticity of his demand, the immediate effect is that those in the industry tend to be hurt by, rather than to benefit from, the increase in productivity. In fact, except where factor payments are determined monopolistically, it may well be that those in an industry are likely to benefit from rapid increases in productivity only where the demand for the products of the industry is income-elastic.

### The Possible Increase in Hourly Earnings with Stable Prices

Suppose that we disregard the complications raised by the need to redistribute labor and accept the contention that it is the general rate of increase in productivity which should determine the amount by which a specific industry can increase its wages. If this policy were followed and all wage increases held to the general increase in productivity, then prices as a whole will be stable but the prices of industries where productivity is increasing rapidly will fall while those of industries where productivity is increasing slowly will rise. On this basis it is also possible to estimate the amount by which wages in manufacturing industries can rise in the future without putting pressure on prices. Since 1955 the annual increase in productivity appears to have been less than 2 percent. Using this figure and assuming that the cost of fringe benefits—which now runs over 20 percent of direct wage payments—does not increase more than 2 percent a year, an increase of somewhat less than 5 cents an hour in hourly earnings from a base of around $2.30 an hour appears possible in the immediate future without increases in manufacturing prices. This is only a little over half the 8-cent average increase received over the last five years, but it is not so very far from the 7-cent average increase received over the last three years.

## Unions and Inflation

We are now in a position to ask our question regarding the cost push more precisely. If the flow of spending is kept constant—or more realistically, allowed to grow only as rapidly as production increases—so as to keep prices stable, is it likely that efforts to raise wages by more than 5 cents an hour will cause prices to rise and output to fall? Another way of stating the question is: Will organized labor be willing to accept wage increases of no more than 5 cents an hour? Let us stress again that the development of the *expectation* among the public in general, and union members in particular, that larger annual increases—perhaps 10 cents an hour in terms of current hourly earnings—are in the natural order of things, stems mainly from the way in which we financed the war. Obviously so long as this expectation continues and is implemented, inflation will continue.

To what extent are unions in practice likely to be willing to accept less? There is no denying that the basis for judging the success of a labor leader is usually his ability to achieve the largest possible increase in wages. There are, of course, other elements: job security, working conditions, pensions, fringe benefits of all sorts. But a leader who cannot deliver a sizable increase in the basic pay packet is likely to be at a disadvantage in competition with both leaders of other unions and potential rivals within his own union. To put the matter succinctly, can a labor leader whip up the sort of support that he must have to stay in power while offering the members of his union a measly 5 cents an hour, especially when a rival promises to settle for nothing less than twice as much?

Are there similar pressures that cause business in general to favor price increases? Most business tends to be especially profitable during prosperity, and periods with increasing prices are generally more prosperous than those when prices are decreasing. Moreover, as costs are usually incurred before prices are determined, rising prices may tend to increase profits, at least to the extent that the rise is not anticipated. Thus business as a whole may well benefit from rising prices. But the benefit does not appear particularly direct nor particularly great; there are, in fact, so many other factors in the picture that a continuance of inflation does not appear particularly important from the business point of view. And there are a large number of firms—such as those selling life insurance—that are most adversely affected by continuing price increases. In short, a businessman is likely to be judged by his ability to increase profits, which may as much result from his ability to decrease, as to increase, prices; but, to the extent that a labor leader is judged by the economic benefits he achieves for his members, he must be judged primarily by his ability to achieve increases in wages.

### Monetary Restraint and the Cost Push

Even granting that union leaders would like to bring home more than 5 cents an hour each year, will they be able to do so in the face of monetary restraint? Those who believe in the effectiveness of monetary measures argue that if unemployment develops, or even threatens, demands by productive factors in general, and wage earners in particular, for increases are likely to be sharply curtailed. There is no doubt that a decline in output and employment can be expected to damp down a cost push. Note that the increase in hourly earnings was much less marked in the recessions of 1949, 1954, and 1958 than in the immediately adjacent years. (Changes in hourly earnings may overstate what happened, for they reflect overtime and the like, measuring changes in business costs better than changes in wage rates as such.) But it is hard to see why the threat of unemployment—or even an actual decline in production—should particularly deter union leaders or most unionized workers. The threat of unemployment, or even mild unemployment, is likely to have little or no direct effect on the men most responsible for union policy, for they are generally older men protected by seniority.

Moreover, it seems likely at the present time that the decisions made by unions tend to determine the rate of increase of money wages in nonunion areas. Whether or not unions raise the wages of their members faster than the general increase in the economy is a topic that has been much debated in recent years; the fact that the debate continues (as Chapter 21 pointed out) means that there is no clear proof that wages of unionized workers rise more rapidly than those of other workers. If this were not generally true, a cumulative maldistribution of workers between union and nonunion areas—of which there is little evidence—would inevitably result. But to the extent that the statement is true, it means that, if monetary restraint cannot moderate union demands, it cannot moderate the general rate of increase in wages.

On the other hand, Table 51-1 may be interpreted as offering clear evidence of a steady slowing down in the rate at which wages are increasing. Were this trend to continue for long, it would certainly greatly reduce the importance of the cost push. Several qualifications are worth noting before the conclusion is reached that inflation is a thing of the past. A minor point is the fact that the automobile workers' contract happened to come up for renewal in 1958 at a time when automobile output had declined drastically. As a result Reuther was forced to settle for a 3 percent annual increase in wages—certainly less than he wanted and less than the average increase even since 1955. But obviously Reuther was particularly hard hit in 1958, and appears to have been able to recoup in the 1961 contracts much of his earlier loss. Moreover, in 1959 the bitterly fought steel strike took place; it is by no means clear that as strong an effort to resist wage increases is likely to be made in the future by an industry of comparable importance.

But far more important than these specific points is the fact that the whole period since 1955 has been marked by slower growth and a higher level of unemployment than previously prevailed in the economy. It is certainly not clear that, without unemployment and slower growth, there would have been any reduction in the rate at which wages increased. The chapter that follows will therefore consider whether or not the unemployment and slower growth we have recently experienced are acceptable. Obviously, unless they are, inflation remains a problem.

# 52

# Inflation, Full Employment, and Economic Development

## Prices and Unemployment Since World War II

Table 52-1 summarizes the behavior of prices and unemployment since World War II. Although the average rate of increase was almost the same in 1951–1955 and 1956–1960, most of the increase during the earlier period actually took place in the single year 1951 as a result of the boom induced by the Korean War. In fact, during the four years 1952 through 1955, prices increased on the average less than 1 percent a year. During this period, understandably, the Federal Reserve authorities were little concerned with inflation and pursued a policy during the 1954 recession designed primarily to bring the recession to an end as rapidly as possible. It was only after prices started upward again in 1956 and 1957 that the Reserve authorities became deeply occupied with inflation and convinced that the monetary ease they had created to help combat the 1954 recession had contributed to the subsequent price increases.

Why did prices start upward again in 1956 and 1957? An examination of Table 51-1 shows that, at least in the manufacturing area, there was no intensification of the cost push: the percentage increase in hourly earnings during 1952–1955 was almost exactly the same as that during 1956–1960. What appears to have happened is that there was a sharp drop in the latter period in the rate of increase in productivity. For the reasons made clear in Chapter 43, rather complicated computations are necessary to obtain an estimate of the behavior of productivity. What we really want to estimate is the increase in output per unit of input *at full employment,* so that it is necessary to estimate what "full em-

TABLE 52-1

Price Increases and Unemployment

| Year | Percentage Increase in Consumer Prices [a] | Percentage Unemployed [b] | FIVE-YEAR AVERAGE [c] | |
|---|---|---|---|---|
| | | | Prices | Unemployment |
| 1946 | 8.5 | 3.9 | | |
| 1947 | 14.5 | 3.6 | | |
| 1948 | 7.6 | 3.4 | | |
| 1949 | 1.0 | 5.5 | | |
| 1950 | 1.0 | 5.0 | 6.1 | 4.3 |
| 1951 | 8.0 | 3.0 | | |
| 1952 | 2.3 | 2.7 | | |
| 1953 | 0.8 | 2.4 | | |
| 1954 | 0.3 | 5.6 | | |
| 1955 | 0.3 | 4.4 | 2.2 | 3.6 |
| 1956 | 1.5 | 4.2 | | |
| 1957 | 3.4 | 4.3 | | |
| 1958 | 2.7 | 6.8 | | |
| 1959 | 0.9 | 5.5 | | |
| 1960 | 1.5 | 5.6 | 2.0 | 5.3 |

[a] Annual increase in consumer price index.
[b] Unemployment as a percentage of the civilian labor force.
[c] Average of annual rates.
SOURCE: Bureau of Labor Statistics.

ployment" output would have been in the absence of deficiency unemployment to obtain an estimate of the behavior of productivity.

This is done in Table 52-2, using the two assumptions discussed in

TABLE 52-2

Estimated Increases in Productivity

| Year | Percentage Unemployed [a] | Percentage of Waste [b] | Actual GNP [c] | Full Employment GNP [d] | Civilian Labor Force [e] | Full Employment GNP per Civilian Worker [f] | Percentage Increase 1950–55 | Percentage Increase 1955–60 |
|---|---|---|---|---|---|---|---|---|
| 1950 | 5.0 | 6.0 | 364.3 | 387.6 | 63,099 | 6,143 | 100.0 | — |
| 1955 | 4.4 | 4.2 | 449.8 | 469.5 | 65,848 | 7,130 | 116.1 | 100.0 |
| 1960 | 5.6 | 7.8 | 504.4 | 547.1 | 70,612 | 7,748 | — | 108.7 |

[a] Unemployment as a percentage of the civilian labor force.
[b] Unemployment in excess of 3 percent multiplied by 3.
[c] Billions of 1960 dollars.
[d] Billions of 1960 dollars; actual GNP divided by one minus the percentage of waste.
[e] In thousands.
[f] In dollars.

Chapter 43: first, that frictional unemployment "normally" amounts to 3 percent of the labor force; and, second, that each 1 percent change in employment will be accompanied by a 3 percent change in output. The reasoning behind these assumptions need not be repeated. But it is worth repeating that the estimates are more valuable for the problems they illustrate than for the precise results obtained, as statistical refinements are certainly possible. But it is unlikely that refinements will alter the overall result, which suggests that the increase in productivity declined from an annual average of perhaps 3.2 percent a year during the earlier period to perhaps 1.7 percent in the latter period—or roughly by one half.

### Prices and Productivity

The relationship between productivity and prices is worth further examination. From 1952 through 1955, hourly earnings increased by an average of 4.25 percent per year while productivity increased by an average of 3.2 percent, suggesting an average increase in prices of about 1 percent; the actual increase was 0.8 percent. Again from 1956 through 1960, hourly earnings increased by an average of 4 percent while productivity increased by an average of 1.7 percent, suggesting an average increase in prices of somewhat more than 2 percent; the actual increase was 2.0 percent. *The closeness of these relationships is clearly a coincidence.* Not only is redistribution—limited though it may be on a continuing or overall basis—clearly possible in the short run, but the measures used are at best partial: the behavior of hourly earnings in manufacture is not necessarily typical of labor costs as a whole, while many prices are not measured by the consumer price index. But, as before, the broad result is likely to survive statistical refinement. It suggests that, just as the Reserve authorities became concerned with inflation, the problem of preventing price increases became considerably more difficult—not as a result of any increase in the cost push but rather as a result of a marked drop in the rate of increase in productivity.

### The Waste of Production in Recent Years

Table 52-1 makes clear that unemployment has been significantly higher in the past five years. In fact, in 1959 and 1960, unemployment was at the same level as during the recession years of 1949 and 1954, so that there has been a sharp increase in wasted productive capacity in recent years. A more precise estimate, using the method discussed in Chapter 43, suggests that, in contrast to a 5 percent waste of potential production during the entire period from 1947 to 1960, deficiency waste from 1951 to 1955 averaged around 3 percent, but that from 1956 to 1960 the average increased to around 7 percent. To the extent that these estimates are correct—and once more their tentative nature should be stressed—the *increase* in the percentage of potential production wasted means that from 1956 to 1960 over $90 billion less was produced than would have been produced had deficiency waste remained at the 1951–1955 level. Note that in this case we have measured waste, not from some assumed value of "normal," but from what was actually achieved between 1951 and 1955.

### Factors Responsible for the Recent Waste of Production

Have the monetary and fiscal policies pursued in recent years been responsible for the deficiency waste we have just measured? It is quite possible that there would have been some slowing down in the economy during the last few years even if monetary and fiscal policies had in some sense been neutral—for much the same reasons that an economy becomes vulnerable after a long-sustained period of prosperity. But monetary and fiscal policies can be blamed for the waste in the sense that they were not used vigorously to increase the level of income. (It can be argued that they could not have done so even if the effort had been made; there seems no point in exploring this alternative as the effort was clearly not made.) The fundamental question, therefore, becomes whether a more vigorous effort to increase output by means of monetary and fiscal measures would or would not have been desirable in view of the possibility that the effort might have led to a more rapid increase in prices in the subsequent recovery.

### The Role of Rapid Economic Development

Before we examine this question, two points need to be made. First, it cannot be stressed too strongly that the prevention of inflation has been made much more difficult since 1955 by the decline in the rate of increase in productivity. Had the rate remained above 3 percent, the 4 percent average increase in hourly earnings in recent years would have involved quite minor—and perhaps generally acceptable—increases in prices. A more rapid increase in productivity is, of course, of immense importance in itself—quite apart from its contribution to reducing inflationary pressures. The only reason that further attention is not devoted to this matter here is that the question of how to increase productivity more rapidly is a vital aspect of the general subject of economic development, to which the whole of Section III was devoted.

### Direct Restraint of the Cost Push

Second, direct efforts to reduce the cost push by education and persuasion of the public in general, and labor leaders in particular, appear clearly desirable. It would be very helpful, for example, if it came to be generally recognized that wages as a whole cannot be increased faster than the increase in productivity, by much or for long, without offsetting price increases. But labor leaders are not concerned with the overall economy; they deal with particular industries where demand may be growing, and productivity increasing, far more rapidly than for the economy as a whole. Moreover, recall that in any given year profits are likely to be large enough to permit a large wage increase without a price increase if we disregard the need to provide for depreciation, the impact of the wage increase on the price of products bought from other firms, and the repercussions of reduced profits on government revenue and corporate saving. The violence of the reaction of the labor movement as a whole to the effort by steel companies in 1959 to establish a smaller pattern of wage increases indicates that it is going to be difficult to get labor to confine its demands to the overall increase in productivity, especially in the case of labor leaders whose jobs are threatened by rivals or who have no interest in overall problems so long as their boys get all they possibly can. And, in fairness to labor leaders, we may admit that it is hard to deny the contention that productivity in the American economy *ought* to be growing fast enough to make a 4 percent annual average increase in hourly earnings possible without serious inflationary consequences!

### The Harm of Inflation

We can now ask our fundamental question more precisely: Assuming that everything possible has been done to increase productivity and to restrain the cost push by education and persuasion, would more vigorous use of monetary and fiscal measures to reduce deficiency waste in recent years have been desirable even if prices were as a result to increase somewhat more rapidly? To answer this question we must examine more carefully the harm done by inflation—defined simply as an increase in prices. There are immense differences in the way in which people react to the "danger" of inflation. There are those who believe that nothing less than the continuance of free enterprise and the preservation of our inherited liberties depend on the prevention of inflation. Equally there are those who believe that we cannot win our struggle with Communism and therefore preserve our inherited liberties if we have to pay the costs they believe are involved in preventing inflation by monetary restraint! One reason for the difference in reaction is that assets with prices fixed in dollars, which depend for their usefulness on reasonable stability of the long-term price level—such as bonds, mortgages, savings accounts, life insurance, and the like—are particularly likely to be held by the middle class. Hence, if they were to be suddenly eliminated, it can be argued that the middle class would be wiped out. In fact, a good case can be made for the contention that Hitler was able to seize power by appealing to a middle class that had in fact been wiped out by the devastating German inflation that followed World War I. Many who feel strongly regarding the importance of preventing inflation doubtless have in mind the prevention of a repetition of the devastation caused by the German inflation.

One does not have to approve the German inflation to point out that there is a vast difference between a situation in which money became valueless within a couple of years and the slow and steady rise in prices that has occurred in many countries since World War II. Specifically, a 1.5 percent annual increase in prices involves a doubling of the price level in roughly fifty years, whereas a 3 percent increase involves a doubling in twenty-five years. Note, first, that a doubling of prices does not eliminate the value of assets fixed in dollars but merely cuts in half their ability to be exchanged for other assets. Note, second, that the rate of increase in prices since 1950 has been closer to the lower than the higher of these two rates. Clearly it is important to specify just what is meant by "inflation" before reaching conclusions regarding its harm. It may also be useful to point out, if only to provide an extreme example, that since 1914 the price level in France has increased more than 100 times faster than that in the United States. Such a fantastic increase has obviously had repercussions on the French economy, but it is not clear that France has developed significantly less rapidly than, for example, Great Britain, which has had price increases not very much different from our own.

### Ways of Minimizing the Impact of Inflation

It has long been recognized that, if the money value of *everything* were to double *uniformly,* it would make little or no difference; the problem raised by inflation is that all prices are *not equally affected.* It was once feared that wages would lag during inflation, but with unions employing economists familiar with price indices—to say nothing of escalator clauses providing for automatic increases in wages as prices rise—it is doubtful if wages, or other prices subject to relatively frequent revision, today present serious problems. Those living on pensions would appear to be obvious victims of inflation. Actually the size of social security payments to the aged is being kept in reasonable alignment with the price level by congressional action, and there is no reason why pensions provided by state and local governments should not be similarly adjusted. Again, private pension funds need not be invested in assets with fixed money values; already many are purchasing common stocks and other assets which can be expected to appreciate with the general price level.[1] And there does not seem to be any reason why the same principle cannot be applied to the saving component of life insurance; the complexities, although undoubtedly real, should not be insuperable.

Probably the most difficult problem involves the assets, fixed in terms of dollars, that are predominantly held by the middle class. It is by no means impossible to devise techniques that would protect such assets against at least major changes in the price level. But rather drastic changes, and the introduction of experimental arrangements, would be involved. I believe that most economists would agree that it would be desirable not to have to make such changes. But it is essential to distinguish between difficult or even undesirable arrangements and those that are impossible.

Estimates of the feasibility of such arrangements—and the viability of continuing price increases—hinge on the degree to which price increases are anticipated. It can be argued that, if people come to expect a steady rise in prices, the attractiveness of assets fixed in dollars will diminish greatly. It can, in fact, be argued that the general public's interest in the stock market and the declining importance of savings bonds reflect in considerable part an increasing awareness of the probability of continuing inflation.

The great advantage of this argument from the point of view of those who fear inflation is that it permits almost all historical evidence to be dismissed! Thus, if the fact is mentioned that prices have doubled in the twenty years since 1940 while the economy forged steadily ahead, it can be dismissed on the ground that the increase was not anticipated—though we have *never* fought a major war without a major increase in prices. Under the circumstances judgment is involved. Overall, in my opinion, it seems probable that the economy can stand price increases—and especially uneven price increases—averaging 1 to 2 percent a year without significant changes in present institutional arrangements. Recall that this rate of increase involves a halving of the purchasing power of the dollar over fifty years; it seems to me that few are concerned with the value of money a half century hence. On the other hand, more rapid increases—averaging, for example, 3 percent—need not necessarily be devastating, but they might well require changes in institutional arrangements to hold their adverse effects within acceptable limits.

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[1] Not many can be expected to equal the pension fund of one company that invested in nothing but its own rapidly rising common stock and ended up able to pay some of those who retired larger pensions than the wages they earned while working!

### Monetary Restraint and Employment

Can we now say that more vigorous monetary policy to reduce deficiency waste was clearly desirable so long as the resulting increase in prices averaged less than 1.5 percent? Not yet. Those who believe in the importance of using monetary restraint to prevent inflation are convinced —or at least say they are convinced—that the use of monetary restraint will increase, rather than decrease, output and employment. William McChesney Martin, Jr., for example, Chairman of the Federal Reserve Board, has said: "Stability [of prices] is not an end in itself but a means by which this higher standard of living can be attained and without which a lower standard of living becomes inevitable."[2] Presumably this means that persistent inflation will intensify economic fluctuations or retard the growth of production.

There is no doubt that production was adversely affected during the German inflation. It also seems clear that a sudden spurt in prices may induce a subsequent reaction; reactions of this sort appear, as already noted, to have played a role in the recessions of 1921 and 1937. But in the 1921 case—which is the clearer—prices rose by one third in two years. Where a slow, steady, and irreversible (now that labor unions have become important) increase in prices is involved, at relatively restrained rates of increase, there does not appear to me to be much evidence justifying Mr. Martin's point of view. In fact, a slow increase in prices may well be stabilizing by severely limiting both the possible size of price declines and the temptation to postpone purchases to some future time.

The historical evidence, moreover, suggests that prosperity and price increases have gone together in the past. A study of the National Bureau of Economic Research, for example, concluded that, when the long-run movement of prices was upward, two of three years were prosperous, whereas, when the movement was downward, two of three years were depressed. Again, most economists would probably agree that any arrangements which made a deflation of wages necessary—at least under modern conditions—can be counted on to cause difficulties. Perhaps the classic case was England's return to the gold standard after World War I at the prewar value of the pound. The monetary restraint that became necessary to preserve the value of the pound appears to have been directly related to the persistence of unemployment, which averaged close to 10 percent of the labor force during the "prosperity" of the twenties. On the other hand, after September, 1931, when Britain left the gold standard and so was freed from any need for monetary restraint to preserve the value of the pound, production increased rapidly. Overall, as Table 28-4 points out, the increase in production in Britain was twice as great during the thirties—which for America was the decade of the Great Depression—as it was during the twenties. Further, in the case of France, development has been rapid at times when prices rose by large amounts (as, for example, after World War II) and slow when prices were quite stable (as, for example, during the thirties). And in our own case the Great Depression followed a period of price stability.

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[2] Statement before the Committee on Finance of the United States Senate, August 13, 1957.

In short, sharp rises in prices may well bring about reactions and therefore intensify economic fluctuations. But, historically, output has usually expanded most rapidly when prices are rising, and sometimes rising quite rapidly. On the other hand, output has increased slowly, and unemployment has tended to be high, when, to preserve the value of the currency or for some similar reason, monetary restraint has been used either to hold down increases, or to attempt to achieve decreases, in costs of production in general and wages in particular.

### Some Controversial Conclusions

As must by now be obvious, any suggestions regarding policy at the present time involve weighing the various factors at issue. Because the weights assigned will differ from person to person, the conclusions that follow are obviously debatable.

The rate of increase in hourly earnings in manufacturing that has prevailed since 1952 would have made necessary price increases of less than 1 percent per year had productivity continued to increase at the 1951–1955 rate. We know relatively little about the factors responsible for long-term changes in the rate of increase in productivity and even less about those responsible for changes in the short run. We do not know, for example, whether or not the monetary restraint of recent years has had anything to do with the sharp drop in the increase in productivity; nor do we know whether or not the present decline is likely to be temporary. On balance, monetary restraint probably played only a minor role in slowing down the increase in productivity—more by retarding innovation than by reducing the flow of inventions. On the other hand, we have no evidence that the present decline is temporary. Our first—and probably least controversial—conclusion, therefore, is that the importance of measures, of the sort discussed in Section III, designed to achieve a rapid increase in productivity cannot be exaggerated, because an increase is vital both for its own sake and for the contribution it will make to the reduction of inflationary pressures.

Second, it is understandable that the normal process of collective bargaining should result in wage increases in excess of the increase in productivity. Despite the appeal of collective bargaining settlements worked out by labor and management without government interference, if the government is to concern itself with the prevention of inflation, it must inevitably concern itself with the broad pattern of wage increases. One special reason for government concern is the—in my judgment unlikely—possibility that a more rapid increase in productivity would simply induce labor to demand more rapid increases in wages. Certainly there is a rate of wage increase in any set of circumstances that makes either inflation or unemployment—or some combination of the two—inevitable; it is for this reason that the broad pattern must be of concern to the government. Moreover, until the increase in productivity can be made more rapid, even the recent 4 percent annual average rise in hourly earnings may create problems. It follows that some reduction in the present rate of increase in factor costs seems clearly desirable. Achieving a reduction by providing an understanding of what is involved should be a real challenge to economists in general and to the Council of Economic Advisers in particular.

This brings us once more to the fundamental question: Assuming that everything possible has been done to increase productivity and to restrain the cost push by education and persuasion, would more vigorous use of monetary and fiscal measures to reduce recent deficiency waste have been desirable even if prices, as a result, increased somewhat more rapidly? In my judgment the answer is in the affirmative. Disregarding fluctuations, we have on the average over the last five years wasted perhaps 7 percent of our productive potential, or 4 percent more than we wasted over the previous five years. The increase over the previous period by itself involves a loss of more than $18 billion a year. This seems to me to be an unacceptably high price to pay for the contribution made by monetary restraint to the reduction of inflationary pressures. It is obviously a price that, with our unprecedented level of living, we can accept temporarily, but it seems unlikely that we will be able to meet the steady increase in our world-wide responsibilities if we continue to waste our productive potential in this way.

### Some Reasons for the Basic Conclusion

Three subsidiary judgments are involved in this conclusion. As Fisher's 1929 prognosis regarding the stock market demonstrates, prediction is always dangerous. But, so far as I can see, present deficiency waste is unlikely to be eliminated unless a considerable increase in the flow of spending is made possible by more liberal monetary and fiscal policies. Because it does not seem to be possible for us to accept the present level of deficiency waste permanently, no purpose appears to be served by postponing the elimination of deficiency waste any longer.

Second, just as it is by no means certain that monetary restraint is likely to be particularly effective in reducing the cost push, so it is unclear that monetary ease is likely to increase the cost push to any significant extent. Obviously, good business will make union leaders more aggressive. But in 1953, when unemployment at 2.4 percent of the labor force was less than the 3 percent that we have suggested can be considered as involving "full employment," the increase in hourly earnings was 6 percent, whereas in 1959, when unemployment was 5.5 percent, the increase in earnings was 5 percent—or only 1 percent less. There appears to be a real possibility, therefore, that unemployment can be reduced to a more normal level without a much more rapid increase in wages. Put the other way round, had it been possible to maintain the 1951–1955 rate of use of our productive potential by more liberal monetary and fiscal policies, it seems doubtful if prices would have increased by as much as 1 percent a year more rapidly—and almost certain that they would not have increased by as much as 2 percent more rapidly. A 4 percent increased waste of potential production to achieve a 1 or at most a 2 percent reduction in the annual rate of price increase seems a poor bargain.

Third, over the range with which we are dealing, more rapid price increases seem unlikely to intensify fluctuations or retard the growth of output. Clearly there *is* a rate of increase in prices that can have adverse repercussions on production, but in my judgment it is a rate significantly higher than any with which we are likely to be concerned. Concretely, there seems no reason to believe that a 1 or even a 2 percent more rapid increase in prices over the last five years would have caused an increase in deficiency waste—or even that it would have made a reaction inevitable at some future time.

In short, at the present juncture in our history, we cannot permanently afford to waste 7 percent of our productive potential—or 4 percent more than we actually wasted during the period from 1951 to 1955—to reduce the increase in prices by an amount that is probably in the order of 1 percent—and almost certainly less than 2 percent. Given a more adequate increase in productivity and a serious effort to educate labor leaders on the undesirability of too rapid increases in wages, it seems likely that prices can be counted on not to increase with unacceptable rapidity. But if productivity cannot be increased or labor leaders educated, then it seems to me that we have no alternative but to learn to live with inflation. For a continuing (but slow) inflation, undesirable as it may be, seems likely to do far less harm—even in the long run—than a permanent waste of our productive potential. Such a waste cannot avoid reducing significantly our ability to contribute in the future to the preservation of a free world.

# Section V

# POSTSCRIPT ON PERFORMANCE

# 53

# Possible Improvements in Economic Performance

## Introduction

In order to provide perspective on the relative importance of the various improvements in economic performance that have been considered, this chapter brings together the several estimates that have been presented. Under free enterprise improvements can result from more efficient economizing, from the elimination of unemployment, and from more rapid economic development. Once again it is worth repeating that the estimates presented are crude. Nor do the areas covered by any means exhaust all possibilities. Increases in performance significantly greater than some that have been considered are possible—especially in areas transcending the conventional boundaries of economics. A case in point is the elimination of various kinds of discrimination. Such broader matters have, in general, been omitted, not because they are unimportant, but because our available tools are, in my judgment, even less adequate for dealing with them than for dealing with those areas that have been considered.

Let us start with improvements in economizing. Recall that in this case performance can improve either because a given output is *redistributed* so as to increase social satisfaction or because output is itself *increased* by the more efficient use of scarce factors of production. But we have seen that accurate measurement of the benefits of redistribution requires "interpersonal comparisons of utility," which cannot as yet be made with precision. Also, the measures we presented of possible benefits from further redistribution suggest that the gains are likely to be severely limited if any significant amount of inequality is to be retained.

Hence, disregarding benefits from redistribution, we shall concentrate on possible increases in output from more efficient economizing. (To simplify, we shall disregard the possibility that people may wish to use the increased efficiency to obtain more leisure rather than more output.)

Recall that, as profits tend to be relatively small, increases in output generally involve the elimination of costs that are excessive in the sense that the scarce factors used add value to output which conveys less social satisfaction than could be obtained from using the factors in some other way. Where excessive costs provide no social satisfactions whatever, the scarce factors in question are clearly wasted. But since it is rare for zero satisfaction to be provided, most of our estimates of waste are in effect estimates of "net" waste in the sense that, when $10 worth of scarce factors produce output which yields only, say, $6 worth of social satisfaction, waste amounts to $4.

## Waste in Economizing

Table 53-1 summarizes the estimates of waste in economizing that were presented in Section II. Note that qualifications regarding the estimates have been omitted. Note also that monopoly profit has been included as a waste—although it is strictly a transfer—on the ground that the additional satisfaction of monopolists from their "ill-gotten gains" is not worthy of consideration from the social point of view. Note, finally,

TABLE 53-1

Waste in Economizing

(Percentages of the national income)

| Area | Short Run | Long Run |
|---|---|---|
| Advertising | 2 | |
| Monopoly | 1 | |
| Labor unions | 1 | |
| Tariffs | 3 | |
| Agriculture | 2 | |
| Subtotal | 9 | 10 |
| Restricted price competition | 3–5 | 5–10 |
| Consumer ignorance | 3–5 | 8–12 |
| Subtotal | 6–10 | 13–22 |
| TOTAL | 15–19 | 23–32 |

that wastes capable of being eliminated in the short run are divided into two groups. The first, including advertising, monopoly, labor unions, tariffs, and agriculture, is composed of areas where the waste is relatively small and relatively easy to measure, whereas the second, including restrictions on price competition and consumer ignorance, involves two areas where the waste appears quantitatively more important but also less clearly defined. The total for all these specific areas suggests that perhaps 15 to 19 percent of the present input of scarce factors is capable of being eliminated without reducing social satisfactions in the "short run"—here meaning approximately five to ten years. This in turn implies that—assuming an all-out effort to eliminate waste in economizing—the increase in output might in the short run be in the order of 20 percent.[1]

In the "long run"—here meaning perhaps twenty to twenty-five years—larger improvements appear possible. Little additional gain seems likely in the first group, as most of the waste involved should be capable of being eliminated relatively rapidly. But in the case of intensified price competition or increased consumer knowledge more time is likely to be needed—but more appears capable of achievement. The overall estimate of approximately 25 to 30 percent may well be on the high side; it certainly is if economizing is rigidly defined. The elimination of excessive labor in the production of agricultural products may take place without any change of which the consumer is aware; but reductions in consumer ignorance involve changes of which the consumer cannot be unaware and, therefore, merge into changes in consumer wants, which are, of course, taken as given in discussions of economizing. Perhaps a 40 percent increase in output is the maximum improvement possible without *significant changes in basic wants* but with *considerable changes in the way in which such wants are satisfied.* Such changes would include, for example, the replacement of many small-scale, high-cost, low-volume stores by self-service supermarkets. This may well be considered to be a change in technology—again usually taken as given in discussions of economizing. It is not so treated here because the existence at the present time of self-service supermarkets in food distribution shows the technology is clearly available; our estimates imply that the consumer would prefer this form of retailing in many other areas of the economy *if* the choice were given him and *if* the knowledge he possessed made him as well qualified to choose in such areas as he now is in choosing among foods.

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[1] The increase in output resulting from the elimination of waste is one divided by one minus the percentage of wasted output (in this case taken as 16⅔ percent).

### Waste Due to Unemployment

The second of our three categories is waste resulting from unnecessary unemployment. The estimates presented in Chapter 43 measured the economic waste of the Great Depression both from the level of production achieved in 1929 and from the level of production that might have been achieved had the economy progressed steadily from the 1929 level of output to the level achieved in 1941. The conclusion was that during the eleven intervening years production was on the average 10 percent less than it had been in 1929 and over 22 percent less than it would have been had growth continued without interruption. In the worst year—1933—output was 30 percent below what it had been in 1929 and 37 percent less than it would have been with uninterrupted growth.

It is obvious, therefore, that the waste caused by a severe depression is of major importance. Specifically, measured from what would have taken place had growth been uninterrupted, output over the whole period would have been almost 30 percent higher, and in 1933 it would have been almost 60 percent higher. To set the estimates in perspective, note that eliminating deficiency unemployment over the period as a whole would have made even more of a contribution than achieving all the short-run improvements in economizing we have just discussed, and that eliminating such unemployment in 1933 would have made even more of a contribution than achieving all the improvements we estimated to be possible in the long run.

As was made clear in Chapter 43, it is not easy to estimate the waste resulting from unemployment in recent years. But, assuming that frictional unemployment "normally" amounts to 3 percent of the labor force and that a 1 percent change in employment is typically accompanied by a 3 percent change in output, it appears that the waste caused by unemployment has been equal to 5 percent of full-employment output over the entire period since the end of World War II. (The 5 percent figure may possibly be on the high side; perhaps 3 to 5 percent is a fairer estimate of the waste involved. But let us use the 5 percent figure to simplify the presentation.) Over the period the level of waste has not been constant. As Chapter 52 made clear, it was average during the last half of the decade of the forties, fell as low as 3 percent from 1951 to 1955, and then rose to about 7 percent from 1956 to 1960. During the last five years, therefore, elimination of unemployment would, to the extent that these estimates are correct, have brought about a 7 to 8 percent annual increase in output—or a total increase over the period worth perhaps $90 billion. In short, although waste due to unemployment has been relatively minor in recent years, it has not been insignificant, especially in the last five years.

### Variations in the Rate of Economic Development

Since 1875 the increase in labor productivity—output divided by the input of man-hours—has averaged a little less than 2 percent. Chapter 7 pointed out that, if past rates continue, income per person in 2000 will be around $5,000. On the other hand, if the rate of increase declines to 1.5 percent, income per person will increase to only $4,200, whereas if it rises to 3 percent, the level in 2000 will reach $7,500. Whether the rate of increase is 1.5 or 3 percent will determine whether a typical person who entered the labor force in 1950 retires with an income of $13,000 or $23,000. In fact, the difference between the levels of living in the United States and Great Britain is the result of a 2.3 rather than a 1.6 percent average annual increase in income per man-hour over the last eighty-five years. It is obvious, therefore, that small differences in rates of development can, over time, bring about major differences in results.

Let us examine the matter further by comparing a 1.5, a 3, and a 4.5 percent rate of increase in productivity. A 4.5 percent rate will cause productivity to double in 16 years, a 3 percent rate in about 25 years, and a 1.5 percent in about 50 years.[2] Moreover, achievement of a 1.5 percent increase in the rate of increase—say, 3 percent rather than 1.5 percent—will cause productivity to be about 16 percent higher at the end of a decade, while a 3 percent more rapid increase will result in a gain of around 34 percent. And over twenty-five years the benefits are even more spectacular: a 1.5 percent more rapid increase will result in a gain of about 44 percent, while a 3 percent more rapid increase will bring a gain of 107 percent!

### A Comparison of Possible Improvements

Table 53-2 summarizes the estimates that have been brought together in this chapter. One aspect of these estimates needs to be emphasized. Improvements in economizing and the elimination of the wastes of unemployment represent one-time improvements in performance—comparable to the increased satisfaction achieved by a consumer who sat down at the start of the year and budgeted his spending with greater care than ever before. Once the increase in satisfaction has been achieved, equally careful budgeting the following year would not bring any further

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[2] Actual times required are 15.7, 23.5, and 46.6 years; to simplify the presentation, rounded figures have been used.

TABLE 53-2

Improvements in Economic Performance

(Estimated possible percentage increases in output)

| | |
|---|---|
| Economizing | |
| Short-run waste | 20 |
| Long-run waste | 40 |
| Unemployment | |
| Average waste during Great Depression (1929–1941) | 30 |
| Maximum waste during Great Depression (1933) | 60 |
| Average waste since World War II | 5 |
| Average waste in recent years (1956–1960) | 7–8 |
| Economic development | |
| 1.5 percent more rapid development for 10 years | 16 |
| 3 percent more rapid development for 10 years | 34 |
| 1.5 percent more rapid development for 25 years | 44 |
| 3 percent more rapid development for 25 years | 107 |

increase; in fact, it would be essential merely to maintain the level of satisfaction that had been achieved. On the other hand, more rapid economic development provides benefits that *cumulate continuously.*

Specifically, starting with a ten-year period, improvements in economizing and the elimination of unemployment might *together* result in rather less than a 30 percent improvement in performance. But over half as much could be achieved in the same period by maintaining a 1.5 percent more rapid rate of economic development and considerably more than 30 percent by maintaining a 3 percent more rapid rate of development. Further, if we look to the next twenty-five years, all the benefits of improved economizing and the elimination of unemployment about equal the net gain from a 1.5 percent more rapid rate of economic development, whereas an approximately 3 percent more rapid rate of development results in a net gain that is significantly over twice as large. But, *most important of all,* so long as the higher rate of development is maintained, the benefits of the improved performance will be repeated every twenty-five years, while in the case of economizing and unemployment—at least to the extent that we have not underestimated improvements in performance—no further improvements appear likely once the present waste is eliminated.

## Two Important Conclusions

This analysis leads to two important conclusions. First, the longer the period with which we are concerned, the more important does rapid economic development become. Hence when we consider what is likely to make the greatest contribution to the performance of our economy over the lifetime of today's college students, it should be obvious that nothing begins to approach the importance of rapid economic growth.

Second, for the same reason the long-run challenge of the Soviet economy should not be underestimated. It is by no means certain that Russia will be able to increase productivity at a 4.5 percent rate or that the rate of increase in the United States, estimated in the last chapter to have been no more than 1.7 percent from 1956 to 1960, will continue at so low a level. But the implications of differences of this size in the rate of development are made unpleasantly clear by Table 53-2.

## Economic Performance and Our Future

As has been made clear, our stress on economic performance is unusual; economics has typically shown more concern with *how* an economy operates rather than *how well* it operates. If the United States existed in isolation, the past emphasis would still be appropriate; with a level of living that is the highest the world has ever known and is rising steadily, concern with economic performance would hardly be urgent. But we do not exist in isolation. As Khrushchev made quite clear to the twenty-second congress of the Soviet Communist party, we are in a race with the Soviet Union which we must win if freedom as we have known it is to survive.

The race is, of course, not exclusively an economic matter; it has both military and ideological aspects. But the performance of our economy will inevitably influence significantly the sort of race that we will be able to run. The sharp decline, for example, in the role that Great Britain is able to play results in no small measure from the relatively poor performance of the British economy over the last half century. Under present circumstances, therefore, the concern of this volume with economic performance appears broadly justified.

But it is also justified in a more specific sense. If our analysis is correct, rapid economic development, and therefore superior economic performance, can result from the devotion of relatively small amounts of current production to such strategic areas as research and capital formation. It is quite obvious that we *could* devote far more to such areas—and equally obvious that we *would* do so if we knew that victory in our race with the Soviet Union depended upon it. If we fall behind in the race, therefore, it is likely to reflect, not a lack of willingness, but a lack of understanding of what is required to achieve superior economic performance.

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